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Improvement in Starch Gum and Grape Sugar Manufacture.

Mr. Hoffmann, a chemist in Beardstown, Ill., has invented an improved method of converting starch, corn or other grain into dextrin gum or grape sugar. He uses steam, diluted acid and water, at a much higher temperature than the boiling point of water in an enclosed and steam tight mash tub. To every bushel of grain about twelve gallons of boiling water are used, and an additional quantity in proportion to the pressure of the steam; one or two per cent of the weight of corn, of weak sulphuric acid is also employed. These are gradually added together, and mashed under steam pressure for two or three hours, the starch of the corn is converted into dextrin, and by the addition of chalk or marble dust to neutralize the acid while at the atmospheric pressure, and when all the acid has been neutralized and the whole has stood for an hour or so, the starch gum can be obtained by evaporation; by continuing the steaming process for a longer period grape sugar is obtained. This process considerably cheapens the manufacture of alcohol, and for the benefit of such as may be interested, we give the claim of the patent:—

"What I claim as my improvement is the combination of steam and acids for converting starch, corn or other cereals into dextrin, gum, or sugar, when said grain is subjected to the action of diluted acids and the temperature of the mass is elevated to 225° or 300°.

Fishes Traveling by Land.

Dr. Hancock, in the "Zoological Journal," gives a description of a fish called the "flat head hassar," that travels to pools of water when that in which it has resided dries up. Bose also describes another variety, which is found in South Carolina, and, if our memory serves us well, in Texas, which, like the "flat head," leaves the drying pools in search of others. These fishes, filled with water, travel by night, one with a lizard-like motion, and the other by leaps. The South Carolina and Texas varieties are furnished with a membrane over the mouth, by which they are enabled to carry with them a supply of water, to keep their gills moist during their travel. Guided by some peculiar sense, they always travel in a straight line to the nearest water. This they do without the aid of memory, for it has been found that if a tub filled with water is sunk in the ground near one of the pools which they inhabit, they will, when the pool dries up, move directly toward the tub. Surely this is a wonderful and merciful provision for the preservation of these kind of fish; for, inhabiting as they do, only stagnant pools, and that too, in countries subject to long and periodical droughts, their races would, but for this provision, become extinct.

MEYER'S REVERSIBLE CAR SEAT AND COUCH.

Fig. 1

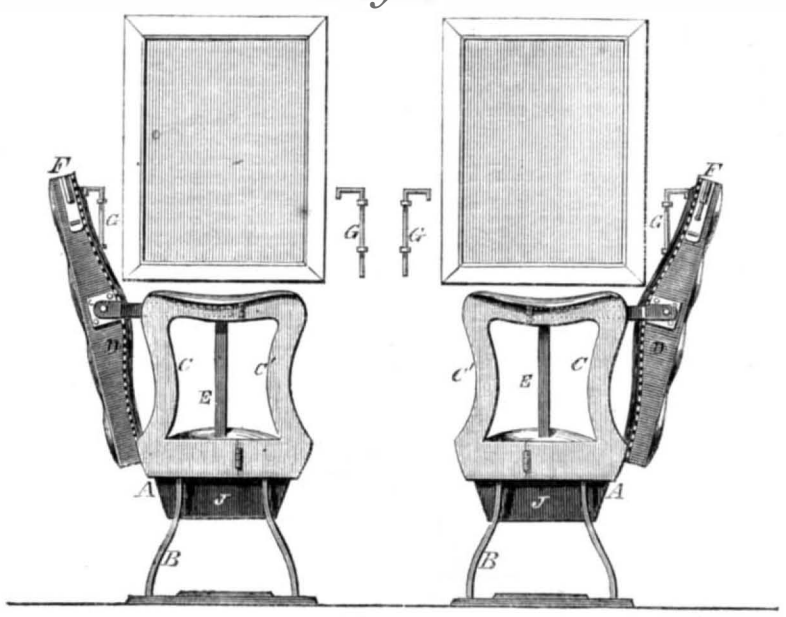
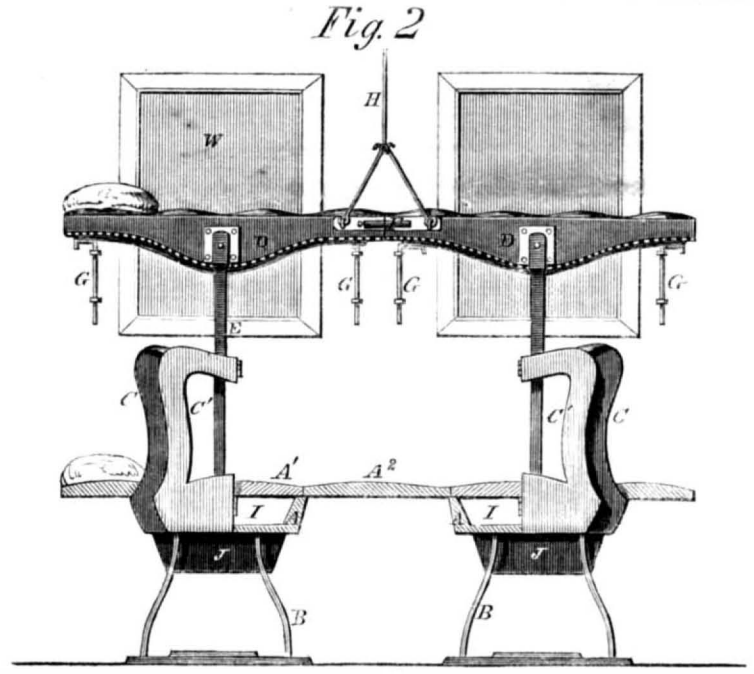


Fig. 2



Since the trial of car seats capable of being converted into sleeping couches, on the Michigan Central, and other railroads in the West, numerous plans have been devised with a view of remedying the defects which experience has made manifest attending those in use.

In this improved plan the objectionable feature of transverse partitions is avoided, and reversible seats having all the conveniences and comforts of the usual form of car seat are provided, which can in a few moments, and with little labor, be converted into double sleeping couches, capable of accommodating all the passengers in the car.

In our illustrations, Fig. 1 represents a side elevation of two of the car seats in a position to be occupied by the passengers in a sitting posture, and Fig. 2 is a side elevation of the same seats converted into double sleeping couches.

A represents the frames on which the bottoms, A′, of the seat's rest, being supported on legs, B. C are the arm rests at the end of the seats, one half of which, C, is made permanent, and the other half, C′, hinged to the same, to admit the swinging half to be opened and brought parallel to the permanent part. D are the backs, cushioned on both sides, and attached to the arm rests, C, by pivoted bars, E, so as to enable them to be reversed at pleasure. F are bolts, secured to the upper corners of the backs, D, and parallel with the ends of the same, so as to admit of them being forced into corresponding hasps on the ends of the backs of the next seat, and in the same relation thereto as the bolts to their back corners, in such a manner as to enable the upper edges of the backs, when brought together in the position represented in Fig. 2, to be secured on line, and by the assistance of dowel pins, projecting from the edge of one seat, and entering corresponding openings in the edge of the other, and a suspension rod or cord, H, having hooks at its end, which are attached to staples at the ends of the backs, to be sustained in a sufficiently firm manner at their ends next the passage way through the car, to prevent them giving way when employed as a double couch.

When it is desired to convert the bottoms and backs of the car seats, as represented in Fig. 1, into the sleeping couches represented in Fig. 2, the swinging portions, C′, of the arm rests are opened, and the cushioned backs, D, are turned upward, and brought to a horizontal position, with their edges in contact, and being secured and sustained by the bolts, F, dowel pins, and suspension hooks attached to the wire or cord, H, at their inner ends, are further sustained at their ends next the sides of the car by swinging hooks or bars, G, which can be turned parallel with the sides of the car when not employed for this purpose. This system of arrangement forms the upper tier of couches, the edge of each back pressing against the next in succession, and thus forming a brace for them all. The additional cushioned frames, A^2, on top of the bottoms, A′, of the seats, are then placed between the said bottoms, A′, and on a line with the same, with their edges resting on the ribs or projections on the sides of the frames on which the bottoms rest, so as to form a continuous additional tier of double berths or couches at a proper distance apart, to enable a free ventilation of air from the window, W. The couches thus formed may be provided with longitudinal division bars or rails, and pillows and other articles of bedding, which, when not in use, can be stowed away in the spaces, I J, below the bottoms of the seats; and if necessary, folding curtains may be attached to each set of berths, to ensure privacy where needed.

The advantages claimed for this plan of seats are, that it affords all the conveniences, including perfect ventilation, of the ordinary car seats, with the comforts of a sleeping car, and that the expense of rendering them susceptible of this change is but slight. It is, moreover, applicable to almost all railroad cars at present in use.

It was patented September 19, 1854, by H. B. Meyer, of Cleveland, Ohio. Any further information can be obtained by addressing the patentee, or Albert J. Meyer, M.D., No. 110 Grand street, New York.

Cleansing Cotton Seed.

A competent correspondent, residing at Antwerp, writes to the Washington *Union* that a machine for cleansing cotton seed has lately been invented and operated in that city. From two to three tuns of seed can be cleaned per day by a machine of four horse power, with the assistance of three persons. The cotton surrounding the seed is taken clean off, and can be sold to carpet manufacturers and paper makers at from thirty to fifty francs the one hundred kilogrammes—about $10 the two hundred and twenty lbs. After the oil is extracted, the cakes remaining can be sold for the same price as other cakes of oleaginous seeds. The cost of the machinery is said not to be expensive. This is an important invention, and promises to be of great advantage to cotton growers.

Rather Disgraceful.

A subscriber complains to us that he sent a gold pen to be re-pointed (with twenty-five cents) to L. H. Martin, of 253 West 25th st., New York, who advertised in our columns, and that he has not heard of pen, money, or Mr. Martin. This is rather disgraceful; and although we are in no way responsible for our advertisers, we wish that no person would use the SCIENTIFIC AMERICAN as a vehicle of publicity without they intend to fulfil their engagements. It is not the first complaint we have had of the same person, which we are sorry that we cannot help; but we have no intention of being innocently made a party to any humbug whatsoever.

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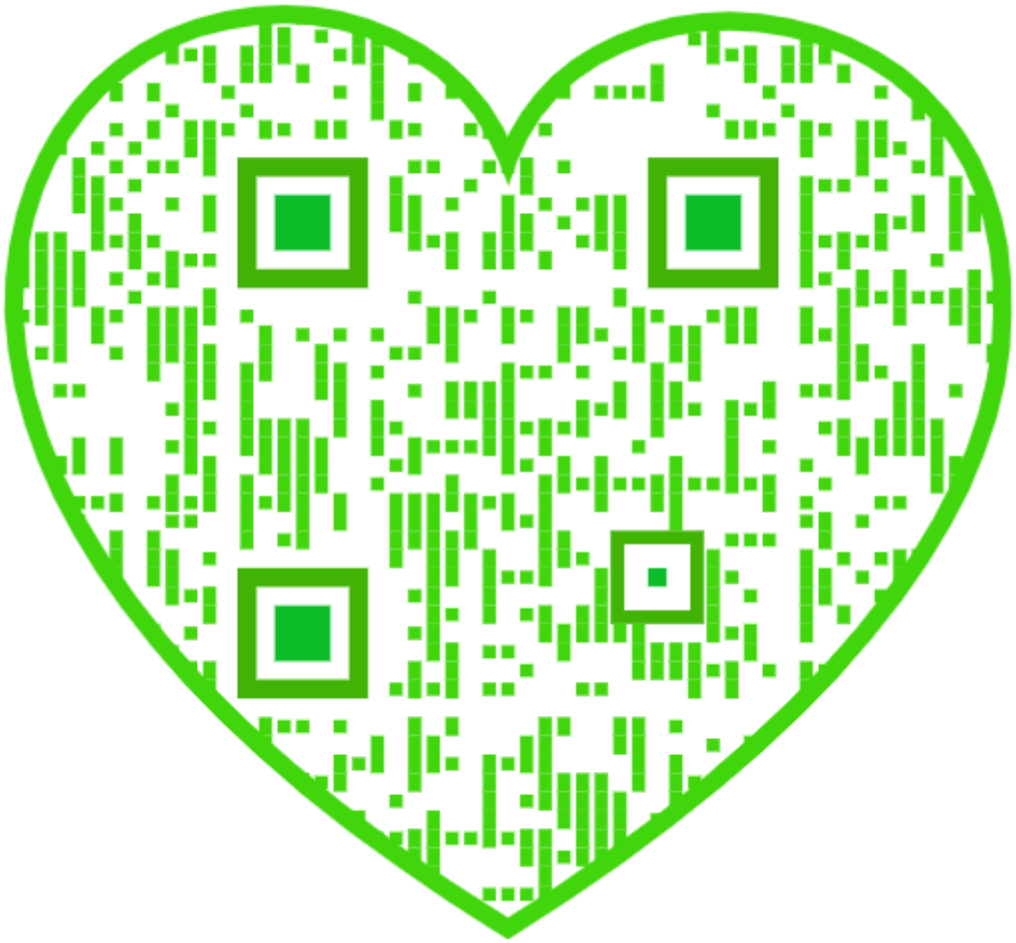

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 27, 1858.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

STONE-SAWING MACHINES—Horace L. Arnold, of Elk Horn, Wis. : I do not claim the employment or use of screws, h h', for giving saws a lateral movement, for they have been previously used.

But I claim the particular means employed for operating the screws, h h', to wit, the rack, J, and pinion, a, gearing, n', rack shaft, H, rack, n', and the wheel, o', pawl, I, and pinion, p', placed on the shaft, F, the whole being arranged to operate as set forth.

I also claim, in combination with the above, the racks m' g', attached respectively to the collar, l', and shaft, G, and used in connection with the pinion, h", and pattern, K, for the purpose specified.

I further claim the plates, j, provided with inclined planes, q, and having rods, k, and slotted bars, t, attached, which bars are connected with adjustable arm, c', whereby the saws are tilted or slightly raised at the termination of each stroke of the frame, and the saws also inclined, as occasion may require, substantially as described, and for the purpose set forth.

[This invention consists in a peculiar arrangement of means for giving a lateral feed movement to reciprocating saws while they are being operated, and also in a peculiar manner of arranging the saws in connection with their frames, the whole being so arranged whereby stone or marble blocks may be sawn with either curved or taper sides, with parallel sides, or sides of irregular form, such as are used for monuments, fence posts, ecclesiastical purposes, &c.]

SELF-ADJUSTING AND EMBOSSING TELEGRAPHIC MACHINE—Edmund F. Barnes, of Brooklyn, N. Y. : I do not claim generally the use of the power of electricity or magnetism for telegraphic messages at a distance, and recording them, either in printed letters or characters, nor the general arrangement of the wires, posts, or electric circuit or circuits, as these are old and well-known.

But I claim the use and application of the combined permanent and electro-magnets in the resident magnet, substantially as set forth and described.

I claim also the arrangement of the springs, k and s, or their equivalent, in connection with the circuit breaker shaft, C, and type wheel shaft, T, by which the circuit breaker arm, d, and type wheel, R, are caused to return to a given starting-point after the completion of each letter, thereby causing the instrument to be kept constantly self-regulated.

I claim also the use and arrangement or combination of the circuit-breaker wheel, D, with its undulated periphery, and the hammer, l, and anvil, i, placed and arranged substantially as described, so that the revolution of the wheel, D, shall alternately connect and disconnect such hammer and anvil, and also connected with the main battery and line, for the purpose of closing and breaking the main telegraphic circuit, substantially as set forth and described.

I claim also the arrangement substantially as described, of the hollow shaft, C, and clutch, f, and arm, d, and the connection therewith, substantially as set forth, of the swing frame, B, by which the clutch wheel g, is made to take hold of such clutch, f, on the hollow shaft, C, to carry forward such shaft, C, and the circuit breaker, and the arm, d, whenever any key is depressed, substantially as set forth.

I claim also the arrangement and combination of the vibrating lever, J, and its nipple, n, with the escapement wheel, o, constructed as described, to cause the type wheel shaft to revolve step by step at every vibration of such lever, substantially as and for the purposes set forth.

I claim also the use and arrangement of the spring, L, with its adjusting slide and adjusting screws, substantially as set forth and described, for the purpose of regulating the action of the vibrating lever, J.

I claim also the arrangement and combination of the imprinting cam, p, the paper propelling eccentric, y, and t e type wheel releasing plane, b', substantially as set forth, being attached to each other, and placed upon a common shaft or otherwise, but so that it is impossible that they should get into different relative positions.

I claim also in connection with such imprinting cam and paper propelling eccentric and type wheel releasing plane, the arrangement and combination of the rod, z, bar, y, and imprinting press, x, and the rod, c', and the rod, o, which together cause the letter to be imprinted, the paper to be propelled far enough for the next letter, and the detent cog wheel, P, to be forced down, so that the type wheel may return to its starting point, and again forced up to clutch the type wheel, and also cause each of these several things to be done at and in its proper time.

I also claim the arrangement of the armature, H, constructed of alternate plates of conducting and non-conducting metals, when combined with an electro-magnet, and used in connection with telegraphic instruments, for the purpose of securing a more rapid vibration of such armature.

I also claim the arrangement of the coiled spring, as described, about the type wheel shaft, T, such spring being set up to and held at a given tension, and such tension being increased only a certain amount by the friction, for the purpose of securing prompt action to such shaft, as described.

I also claim generally the arrangement and combination of the said several parts described, substantially as and for the purposes set forth.

PLOWS—Samuel R. Bliven, of McDonough, N. Y. : I do not claim broadly a reversible share, for they have been previously used, although I am not aware that they have been arranged like the one shown.

I am also aware that double mold-boards have been used; I therefore do not claim such.

But I claim the reversible share, E, attached to the shaft, F, and connected with the lever, G, or its equivalent, in combination with the two mold-boards, B B', the parts being arranged relatively with each other, as and for the purpose set forth.

[There are some plows constructed so that certain parts will reverse, and thus turn the sod on either side of the implement, as occasion may require. This is an improvement on one of these; and it consists in the employment of two stationary mold-boards in connection with a reversible share, so arranged as to perfectly attain the end desired.]

OMNIBUS REGISTER—Louis Brauer, of Washington, D. C. : I do not claim moving the indicator of a register by pressure upon the steps.

But I claim the employment of an elastic step, by means of the movable rods, K K, for operating the register plate and bell, in the manner set forth.

COUPLING FOR RAILROAD CARS—George S. Bishop, of Washington, D. C. : First, I claim the squared chambered bumper block, A, when made to receive the sliding and block, C, to overcome the friction on pin, D, and link, B.

Second, I claim the lever, E, in combination with the pin, D, and block, C, and bumper head, A, and pin or handle, L.

Third, I claim the peculiar manner of constructing the mouth of the bumper, and its connection with the V-shaped mouth of the block, C, for holding the link, B, to any de ired horizontal angle, and by which the block may be tipped to prevent the link from being crippled, and also for holding the same in poise at any desired angle, the whole operated by lifting the pin, D, when constructed and operated in the manner and for the purposes set forth.

WATERPROOF CEMENTS—Abraham Brower, of New York City : I am aware that waterproof compositions for leather, consisting of tallow, suet, wax, rosin, tar, oil and india rubber have been employed; these I do not claim of themselves, singly or combined.

I am not aware, however, of shellac or glue ever having been employed in unctuous waterproof compositions for leather; but these I do not claim of themselves in my composition, apart from the other ingredients, as all are required combined, to render it so excellent for the purposes set forth.

What I claim is, the composition composed of all the ingredients described, and in about the proportions for the purpose set forth, the same constituting an improved new and useful article of manufacture.

[By a judicious compound of tallow, beeswax, resin, shellac and glue, the inventor produces a very superior waterproof composition, the leather remains soft and pliable, will take a polish, and repel water very perfectly.]

BEARING BLOCKS OF TRUSS BRIDGES—Albert D. Briggs, of Springfield, Mass. : I do not claim separately any of the parts of the truss frame.

But I claim the method of increasing the bearing surfaces, for the bearing blocks, d d e e, by the employment of the combination of blocks or keys c', c', and blocks, h h, the former being tightly fitted between the chord sticks, and the said bearing blocks, and the latter between the ends of said bearing blocks outside of the chord sticks, substantially as described.

[A notice of this improvement will be found on another page.]

METHOD OF COUNTERPOISING GASOMETERS—P. T. Burtis, of Chicago, Ill. : I claim the arrangement of the chains, e e, in combination with the weights, d d, and chains, a a, substantially as described, whereby, when there is any tendency on the part of the holder, or the section thereof, to which said weights are applied, to work unevenly, the highest side is relieved from the counterbalance weights, and two of the said weights are brought wholly into action on the lowest side, substantially as explained.

[This invention is applicable to telescopic gasometers, or to gasometers in which the holder is single. It consists in a certain arrangement of the chains connecting the counterbalance weights of the holder, or of any of its sections, whereby any binding in the tank and uneven rising and falling, and the loss of gas, and other bad consequences which are caused thereby are prevented.]

PLATES FOR BURGLAR-PROOF SAFES—Ira L. Cady, (assignor to J. B. & W. W. Cornell & Co.), of New York City : I claim forming a burglar-proof combination plate by the union of a stratum of molten iron with one or two perforated face plates of wrought iron, substantially in the manner represented and described.

SEWING MACHINES—Luman Carpenter, of Oswego, N. Y. : I am aware that the feed in sewing machines has been produced by a projection or fixed cam on the end of the needle bar or feed bar, or both; also that the feeding bar has been pivoted to a tilting lever and operated over an adjustable screw as its fulcrum. Neither of these arrangements do I propose to claim.

But I claim the combination of a tilting dog or cam, F, with its friction spring, H, and pivoted vibrating bar, G, when operated by the needle bar for feeding the cloth, in the manner substantially as described.

AXLE BOXES, &c.—David Cumming, of Sorrel Horse, Pa. : I claim, first, The peculiar form of the outer end of the axle, c, and tapering hole, e, in box, F, when the said axle and box are arranged relatively to each other as described, for the purpose set forth.

Second, The combination of the two inner portions, E and E', of the box with the clasp, C, as and for the purposes described.

METHOD OF CUTTING BOOT FRONTS—John Dick, of New York City : I am aware that boot fronts have been made without crimping, by being made of more than one piece of leather, or other material, and I do not, therefore, claim making a boot front which can be used without being crimped.

But I claim cutting a boot front out of a single piece of leather or other material, to the form described, or to any other form, substantially the same, whereby it can be used (in making the same into a boot) without undergoing the operation of crimping, as set forth.

PAINTS—J. S. D'Orsey, of New York City : I claim the paint composed of carbonate of lead or oxyd of zinc ground in oil, mixed with carbonate of lime, and reduced by the compound vehicle specified, either with or without the addition of pulverized sand or sulphate of baryta and sulphate of copper.

[This new paint is intended to be used as a substitute for oil paint in painting the plaster walls and ceilings of buildings, and other plaster work. Its character is such that it becomes exceedingly hard, and is not affected by the dampness of the plaster or of the atmosphere. It will not peel off from the plaster, as oil paint frequently does; it resists the action of atmospheric changes in temperature, admits of the use of all mineral and metallic coloring matters, either mixed with it or for ornamental work upon its surface, is not affected by the action of gases so much as oil paints, and requires fewer coats than are necessary of oil paints. Its composition will be seen in the above claim.]

SEWING MACHINES—Cornelius Donovan, of Abington, Mass. : I claim the application or attachment to the sewing machine of the stop motion described, consisting of the lever, a, the cogged segment, b, the rack, c, the belt guide, d, the brakes, j j, the crank, n, the springs, i i i i, and the lever, h, the cam, k, the pulleys, e1 e2, and the belt running on them, the pulley, e3, arranged and operating in the manner described.

SAWING MACHINE—William H. Doane and Carlile Mason, of Chicago, Ill. : We claim the arrangement of the gearing, k l b b c c, in connection with the levers, Q, and feed rollers, R, so that the rollers may be expanded and contracted without at all interfering with their rotation.

We further claim placing the rollers, R, on the shafts, O, as shown, to wit, having the rollers hollow, provided with bearings, f, which are fitted on the upper ends of the shafts, O, and also provided with pendent pins, g g, which are fitted over the drivers, e, of the shafts, O, the upper journals of the rollers being fitted in adjustable bearings, S, substantially as and for the purposes set forth.

[This invention relates to an improvement in machines for re-sawing, and is designed chiefly for sawing boards or "stuff" into weatherboards or "siding" for buildings. The object of this invention is to obtain a self-adjusting feed device, that is to say, to so arrange the feed rollers that they will always present the stuff centrally to the saw, without any manipulation on the part of the attendant, so far as the rollers are concerned. The invention also has for its object the ready adjustment of the feed rollers, so that the same may present the stuff vertically or obliquely to the saw, as occasion may require.]

OPERATING WINDOW BLINDS—Andrew Ferber, of Elizabeth City, N. J. : I am aware that the rods of blind slats have been connected to the ends of the slats, and arranged in various ways; a patent, for instance, was granted to L. Stevens and S. B. Ellithup, June 26, 1855, for an improvement in window blinds, in which the tenons of the slats were forked, and the rods connected to them. A patent was also granted to T. Christian, March 2, 1858, for improvement in window blinds, in which pulleys were attached to the ends of the slats. Both the cases above referred to differ essentially from mine.

I do not claim broadly operating the blind slats by a mechanism connected with one end of them.

Nor do I claim broadly a rod attachment at the ends of the slats.

But I claim the rod, c, fitted in one of the stiles, a, of the blind, and provided with pins, i, which are fitted in oblique slots, c, in plates, d, attached to the ends of the slats, the parts being arranged substantially as and for the purpose set forth.

I also claim the rod, c, attached to the slats, B, as shown, in combination with the spring, k, fitted within the mortise, j, and attached to the stile, a, the whole being arranged substantially as and for the purpose set forth.

[The slats are attached to a rod, and fitted in one of the stiles of the blind, and the rod is attached to the stile, so that the rods cannot obstruct the light, nor act as encumbrances, as hitherto, and the slats cannot turn or move casually. The invention improves the appearance of the blind, and renders it more durable than those of ordinary construction.]

HARNESS TUG BUCKLE—John H. Feraw, of Hinsdale, N. Y. : I claim the double tongue, cog wheel, and traversing bars, arranged and operating in the body or box in a manner so as to adjust itself in lengthening out and taking up the traces, as described.

RAILROAD CAR SPRINGS—John J. Fields, of Brooklyn, N. Y. : Disclaiming the mere application of elastic substances for springs, as well as disclaiming in full the invention, use, or application of perforated concave devices or forms, described and claimed by Fowler M. Ray, and by him designated as "frustums of hollow cones," with central rod.

I claim the cup or receptacle, a a a a, formed with the larger cavity, b b b, the swell or ledge, c c c, the sloping or conical cavity, d d d e e e, the elastic hollow cone or sheath, f f g g, the inverted cone plunger or core part, h h i i, through all of which the whole elastic principle or property of the material or substance used is brought into requisition, and the pressure or weight applied is equalized or diffused throughout the substance employed, substantially as set forth and described.

STOCK FOR HOLDING THE CUTTERS IN ROTARY PLANING MACHINES—Ivers Gibbs, of Worcester, Mass. : I am fully aware that many things have been wrought and cast hollow, for the sake of strength and lightness. This I do not claim.

But I claim a planer arm of the external form described, and having both longitudinal and vertical openings through it, for the purpose and in the manner set forth.

APPARATUS FOR DISTRIBUTING STEAM—Robert Hale, of Roxbury, N. Y. : I do not limit myself to the exact form of "distributor" described, as it may be varied without departing from the spirit of my invention. For instance, if the distributor is placed in a corner of the tank, a quadrant shape may be found to be better suited to the position occupied by it, a flat cap may be placed over the funnel-shaped orifice of the connecting pipe, leaving an annular opening around it.

Thus far I have spoken of my invention as particularly applicable to heating the feed water of engines, and it is my intention to employ my distributor in connection with a method of separating a portion of the exhaust steam of locomotives for the purpose of heating the feed water, but it is obvious that it may be used to advantage whenever water is to be heated by the injection of steam as in bathing establishments and manufactories. I do not therefore limit myself to its employment for the purpose of heating the feed water of steam engines alone, but intend to employ it wherever it may serve to accomplish the end which I have in view.

What I claim is the distributor described, or its substantial equivalent, operating as set forth, for the purpose of injecting the steam into the water in a thin sheet as set forth.

VALVES IN GAS APPARATUS—August Hendrickx, of New York City : I claim in the application of water valves to the main pipe of gas retorts, the use of a loose perforated cover, C a, substantially as and for the purposes set forth.

[A full description of this improvement appears on page 382.]

WHEELWRIGHTS' MACHINE—Wm. Hinds, of Otsego N. Y. : My claims to the improvements embodied and combined in this machine over others for the same uses are, that it is constructed in a stronger, more compact, and in a more durable manner and less liable to get out of repair. That the machine in all its parts is in a form to render its construction simple and cheap, and can be more speedily shifted and adapted to the different kinds of work to be performed. That it is more simple, easy and expeditious to use, and works with a precision as exact as man can think or desire.

I claim, first, Combining regular perpendicular ways, both in the mandrel carriage and in the head blocks, to operate conjointly in adjusting the augers to different positions for boring.

Second, I claim the method of adjusting the hubs for boring by suspending and revolving them on gudgeons in a carriage that vibrates the other way on a pin, and is set and controlled by thumbscrews at d d, the revolving motion of the hub being set and controlled by index wheels and the latch, at f.

Third, I claim the entire construction of the spoke-holder and carriage, embodied therewith, together with the catch or hook for controlling its motion.

Fourth, I claim the wheel carriage and plates to be used on the ends of the hub to confine the motion of the wheel to the axis of the hub and axle.

APPARATUS FOR REGULATING THE SUPPLY OF WATER TO STEAM BOILERS—Z. L. Jacobs, of Hebron, Conn. : I claim first, The combination of a chamber having alternate communication, with a reservoir to receive a fluid, and a boiler or other vessel in which to deliver it, causing the fluid, when it rises to the desired hight in the latter vessel to check the passage of air and other aeriform bodies to the aforesaid chamber, and thereby to regulate automatically the flow of fluid from said chamber, substantially in the manner set forth.

Second, I claim the movable pipe, L, or its equivalent, in combination with the vessel, A, for the purpose of changing the line at which the fluid is to be sustained in the boiler or vessel, A, as described.

Third, I claim the ring, D, and the plug, O, when constructed, combined and operated in the manner and for the purpose described.

"FLUSHING VALVE" TRAP FOR SINKS, SEWERS, &c.—Samuel Mathews, of New York City : I do not claim a culvert in itself, or valve for water closets.

But I claim the combination of the basin, d, and valve, 1, with the overflow culvert, 8 9 10, in the trap, substantially as and for the purposes specified.

MACHINERY FOR PILING PAPER—J. C. Kneeland, of Northampton, Mass. : I claim a combination composed of the following elements :—First, a carrier, E, made of endless belts and rollers, or their equivalents, and arranged substantially as specified; second, holders or holding mechanism, consisting of a rod or roller, G, one or more flexible strips, H H, or bars, I I, or equivalent devices; third, mechanism to keep each roller of the carrier from revolving, while such roller is drawing the paper along over the table; fourth, mechanism to cause the roller to revolve and discharge the sheet of paper at the proper time as specified; fifth, A table, L, or its equivalent, to receive the paper from the carrier.

And in combination with the above described laying mechanism or combination of mechanical elements, I claim one or more bars or guards, g' g', arranged substantially as specified, and so as to prevent the sheet of paper while being carried forward from being drawn against the rear edge of the pack on the table, and being torn or injured thereby.

MANUFACTURING NAILS—John D. Krauser, of Reading, Pa. : I do not claim rolling nail plate to an edge one side by inclining its faces, as is practised in making horse shoe nail blanks.

Nor do I claim sharpening a single edge, as in the strips of wood from which shoe pegs are split, as my invention is altogether distinct from these cases.

But I claim the process as set forth, of making cut nails with improved points, that is to say, beveling both edges of the nail plate, so that the blanks shall be wedge-shaped at both ends, as shown in Fig. 2, and forming the head by the action of the heading tool against the widest end of the blank, as set forth.

SIGNAL LANTERN SWITCHES—S. N. Lennon, of Deposit, N. Y. : I am aware that colored and sliding glass plates have been employed for signal lamps or lanterns and analogous purposes, and I therefore do not claim broadly the use of such plates.

But I claim attaching the colored glass plates or slides, e f, two or more of which are placed at each side of the lantern to a pendulous frame, c, placed within the lantern, and arranged in such relation with the colored plates or slides, e f, as to operate in connection with the switch lever, F, substantially as described and for the purpose set forth.

[A full description of this invention will be found on another page.]

COMPOUND RAILS FOR RAILROADS—E. E. Lewis W. B. Dunning and C. Wheat, of Genoa, N. Y. : We claim the cap and base rail, constructed as described, and keyed together as specified and for the purposes set forth.

PAPERMAKING MACHINES—Thomas Lindsay, of Westville, Conn., and Wm. Geddes, of Seymour, Conn. : We do not claim the gage, K, nor do we claim, separately, the adjustable deckles, C C, for they have been previously used.

But we claim the expanding lip or basin, J, in combination with the adjustable deckles, C C, and straps, D, the above parts being arranged to operate as and for the purpose set forth.

[A notice of this improvement is given in another column.]

BRAN DUSTERS—S. B. Manning, of Alleghany, Pa. : I do not claim as new the use of the wire gauze covering, nor the slats, r' r', nor the concave, a.

But I claim the use of a separate chamber covered with coarse wire net work, in addition to and in combination with the ordinary chamber covered with fine gauze wire net work, arranged substantially in the manner and for the purposes set forth.

CHURN—M. R. Marcell, of Dansville, N. Y. : I do not confine myself to the precise position or arrangement of the fanblower, as it may be placed on the side instead of the top of the churn, and connected with the driving shaft by level or spur gearing.

I claim, first, In combination with the blower, the dasher constructed substantially as described, whereby a current of air blown through the dasher shaft is caused to issue from the dasher below the surface of the fluid in the churn in fine jets for the purpose set forth.

Second, The double deflecting plates, constructed substantially as described in combination with a churn box for the purpose as set forth.

HANGING CARRIAGES FOR CHILDREN—Gilbert Maynard, of Grenfield, Mass. : I am aware that spiral springs have been applied to vehicles, and arranged in various ways, both singly and combined with other forms of springs : I therefore do not claim broadly and in the abstract the employment and use of spiral springs in children's vehicles.

But I claim forming the springs of the chaise, and the axle or bearings of the wheels, C, of the same, by means of a single rod, B, bent and applied to the device, as shown and described.

[The inventor forms the springs of children's chaises and the axles or bearings of the wheels of a single rod of iron or steel, bent or curved in a peculiar way, so that their construction is much simplified, and a superior chaise obtained.]

GRATES FOR STEAM BOILERS—James Montgomery, of Brooklyn, N. Y. : I am aware that boilers have been constructed in the manner of two horizontal tubular boilers placed back to back with one smoke-box common to both, and with the grates of the two connected so as to appear as one grate for the two series of flue tubes, and with a door at each end; but this mode of construction does not present the mode of operation which I have invented and claim as my invention, for each half of the grate belongs to, and acts in connection with its appropriate set of flue tubes as in two separate boilers, and the products of combustion from the coals on one end of the grate cannot be made to pass over the other end of the grate.

I claim combining with a boiler formed with a series of vertical water tubes, and the flue space among the said tubes communicating with the fire chamber at one end only, substantially as described, a grate made the whole or nearly the whole length of the boiler, and with the fire door at each end, substantially as and for the purpose specified.

SPLICE PIECES FOR RAILROAD RAILS—Ellwood Morris, of Philadelphia, Pa. : I do not claim, broadly, splicing together the ends of two rails by plates bolted to the sides of the same, as this device has been heretofore used both in this country and in Europe.

But I claim splicing together the ends of the two rails by means of a plate or plates so bent and formed, and so secured to the opposite sides of the two rails as to embrace the lower flanches of the same, and have longitudinal bearings against the sides, and at points above and below the narrowest portion of the rails, leaving a longitudinal open space between these points, transversely through which space pass the bolts for securing the splice, the whole being arranged substantially in the manner set forth and for the purpose specified.

SEWING MACHINES—Charles Moore, of Buffalo, N. Y. : I do not claim the feed plate described, nor the combination thereof with either function it performs, when said functions are separately considered; neither do I claim any part of the mechanism, nor any combination thereof by which the feed plate is operated, or by which either function thereof is produced when separately considered.

But I claim the elastic compression plate, B, constructed with an offset or face, B 2, which projects through the bed plate, and performs the combined functions of supporting the cloth equally upon all sides against the puncture of the needle, and of producing an equal pressure upon the cloth upon both sides of the seam or line of stitch when in the act of feeding, substantially as described.

I also claim the self-expanding looping springs, Q, arranged and operating as described, in combination with the slotted hanger, U, and springs, V, for the purposes substantially as set forth.

CLOSET FOR MILK—Edward H. Nash, of Westport, Conn. ; I do not claim simply constructing a box or

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closet with blinds for sides, so as to admit air and exclude the sun, for this is a common device, and is used in many instances as in well-houses, &c.

But I claim the box or case, A, in combination with the rotating shaft, C, and shelves, D, arranged as and for the purpose specified.

[A notice of this improvement will be found in another column.]

STEAM BOILERS—Orrin Newton, of Pittsburg, Pa.: I am aware that superheated steam has often been used, but as I do not design by my invention to superheat steam, nor to make any chemical change whatever in the steam itself, but merely to fit it for exerting its full power when it reaches the cylinder of the steam engine by previously subjecting it, after it leaves the prime generator to a sufficient degree of heat to expand the steam, and convert into steam any water or watery vapor which has passed with it from the prime generator anhydrating and expanding without superheating it, I therefore do not claim the use of superheated steam, nor any apparatus for superheating it.

But I claim the mode described, or its equivalent, producing a more perfect calorification and expansion of the steam after it leaves the prime steam generator, and before it enters the cylinders of the steam engine by means of two or more steam chambers constructed as described, separate from the boiler, and heated by hot air from the furnace; the steam thus anhydrated passing to the cylinder of the engine from one of these separate chamber, while the steam in the other chamber is being prepared for the next stroke of the engine substantially in the manner and for the purposes set forth.

WHEAT DRILLS—Edward O. Bryden, of Lafayette, Ind.: I claim the combination and arrangement of the cutters, H H H H, and teeth, G G G G, with the concentric halder holders, D D D D, and levers, E E E E, and the combination and arrangement of the slides, Q Q and u u, and the levers, P P, with the pitmans, O O, and cranks, n n, when constructed and operated as set forth.

ADJUSTING MOSQUITO BARS—F. C. Payne, of Hebron, Conn.: I do not claim the sheave arrangement as used for hanging lamps, &c.

But I claim the application of the slotted projection, D, the hanging weighted arm, F, in the manner and for the purpose substantially as set forth and described.

COMBINATION OF THE NEEDLE AND SUNDIAL TO ASCERTAIN TIME—Charles R. M. Pohle, of Richmond, Va.: I do not claim as my invention the magnet needle, nor do I claim as my invention the sun-dial.

What I claim is combining the magnetic needle with the sundial, so that the point of compass is at all times at hand, and thereby the time of day ascertained from the dial, by holding the dial horizontal, and due north and south.

GRATES FOR LOCOMOTIVE ENGINES—Joseph W. Pole, of Philadelphia, Pa.: I do not claim the invention of hollow or tubular grate bars or of hollow bearers therefor, having aft passages through them.

But I claim the construction of the tubular bars, with hollow upward projections, b b, fitted with movable top pieces, c c, substantially as and for the purpose specified.

[A notice of this improvement is given in another column.]

GAS REGULATORS—J. H. Powers, of Newark, N. J.: I do not claim the inverted pressure cup, nor the grooved or notched inverted cup-shaped valve working in a seat of quicksilver, as the cup is specified in several patents, and the valve is specified in combination with the cup in my patent of Sept. 1, 1857.

Nor do I claim any of the other parts of the regulator as separately considered.

But I claim the arrangement of the annular pressure cup, B C, and regulating valve, D, in the double annular quicksilver basin, e f, whose inner and outer channels, e and f, are arranged at a distance apart to form between them a passage, J, through which a communication is established between the interior of the cup and the atmosphere, all substantially as described.

[A description of this invention appears in another column.]

COMPOUNDS FOR TREATING POTATO ROT—Lyman Reed, of Baltimore, Md.: I do not broadly claim the application of heat or oils or poisonous substances to destroy insect life, as this has been done before for other purposes.

But I claim the treatment of the potato preparatory to planting to the process set forth, subjecting it to solar or artificial heat, and then to the action of the liquid described, or any other analagous or equivalent thereto.

MODE OF OPERATING THE MECHANISM OF PRINTING TELEGRAPHIC MACHINES—Thomas Reeve, Joseph Reeve and Sidney M. Tyler, of Brooklyn, N. Y.: What we claim as improvements in the mechanical arrangement of Barnes' telegraphic instrument is, First, Arranging the keys in a flat plate or key board, in a semi-circular form, substantially as described, securing thereby a direct connection between such keys and the swing frame.

Second, Applying the points or clutches, 12 12, at a distance from the shaft, e, and in connection therewith making such a shaft a round instead of square, for the purposes set forth.

Third, The use and application of an independent friction, constructed substantially as described, upon the type wheel shaft, to secure in connection with the coiled spring more prompt and instantaneous action to such shaft and the type wheel thereon, whenever the magnet releases the escapement wheel, o.

Fourth, Disconnecting the receiving portions of the instruments from the transmitting portions, to assist the operator in transmitting substantially as described.

BRICK MACHINES—S. C. Salisbury, of Milwaukie, Wis.: I claim the large cylinder, M, in combination with a series of small cylinders, I, spring guard plates, a' a', and die box, a2, the whole being arranged and operating as set forth.

I claim cutting the bricks of the required lengths from the continuously moving body of clay by means of the double knife passing through the forming die in the manner set forth.

COUPLING FOR HORSE RAILROAD CARS—Blaney E. Sampson, of Boston, Mass.: I am aware that it is not new to make cars self-shackling when brought together, railroad cars often having couplings so applied; and I am also aware that common carriage poles are made without joints. I therefore do not claim making horse cars self-shackling, nor making a pole to a horse car in one piece.

I claim the described method of constructing and applying the pole so that it shall be in position to shackle when brought against the platform at any common angle of presentation.

I also claim so applying the pole as described that it shall be supported by the car, instead of upon the horses, as is usually done.

THE PRODUCTION OF ILLUMINATING GAS—J. Milton Sanders, of Cincinnati, Ohio: I claim carrying the mixed vapors of water and hydrocarbon, formed in the manner described into a retort, containing carbon at a high red heat, for the purpose of producing an illuminating gas.

CLOTHES' WRINGER—Isaac A. Sergeant, of Springfield, Ohio: I claim, first, The yoke, B, provided with a suitable hitching arm, the said yoke being adapted to be temporarily attached to a wash tub, or readily disconnected therefrom, as explained, and employed as a bearing for a rotary clamp, for wringing clothes.

Second, In the described connection with the yoke, B, I claim the movable clamp, H I J K, and pawl and dog, P O, by means of which the said clamp is retained within the yoke, or may be readily removed therefrom at will to be cleansed or dried.

Third, In the described connection with a rotary clamp for wringing clothes I claim the hinged and yielding hitching arm, E, for the purposes explained.

MACHINE FOR WEIGHING AND REGISTERING GRAIN—J Scheitlan, of Columbia, South Carolina: I claim, First, A bucket with two compartments for a grain weighing and registering machine, which is suspended freely from the arm of the balance until the weighing is completed, and does not require to be turned or oscillated to dislodge the grain.

Second, The combination of a bucket with a tipping bottom to open and close the compartments alternately, with a tipping tray operating substantially as described.

Third, The combination of the roller-arm or its equivalent with the scale beam and registering apparatus, in such manner that the some part of the mechanism which makes the count, also resets and locks the tipping bottom, so that no miscount can be made.

FEEDING QUARTZ, &C., TO MACHINES FOR CRUSHING AND GRINDING THE SAME—Charles Powel Stanford, of Mount Gregory, Cal.: I claim the arrangement described of a lever, I, which is adjustable by a set screw, J, in connection with a shoe, H, in such a manner that said shoe is agitated by the dropping of the stamper, and some of the quartz or other substance is caused to fall into the pan or mortar at such a time, and in such a quantity as desired.

[This invention consists in arranging a lever in connection with the shoe, from which the quartz or other substance is fed to the pan or mortar in such a manner that it is agitated by the dropping of the stamper whenever the crushing surfaces come close enough into contact to make a fresh supply desirable.]

CORN HARVESTERS—Albert Stoddard, of Tecumseh, Mich.: I do not claim being the first inventor of a corn harvester.

Nor do I claim the parts of my machine separately.

But I claim the combination with the main frame A, of the pinion, E, shaft, G, pinion, H, cog wheel, I, saw, J, shaft, K, reel, L, guard, P, wheel, x, belt, W, shafts, V V, their pulleys, u u u u u u, endless belts, T T T, hopper, Z, its pivot, &, slide, 4, bar, 3, and caps, 5, when these several parts are arranged as and for the purposes set forth.

HORSE POWER MACHINES—James A. Stone, of Rochester, N. Y.: I claim the construction of the base when combined with the wheel, I, to form a trussed arch, whereby not only is great strength secured, but the length of the shaft, c, and its consequent liability to vibration is lessened.

COMPOUNDS FOR PROTECTING TREES FROM INSECTS—William W. Taylor, of Dartmouth, Mass.: The construction of the trough, A, in two pieces, as described, has not been claimed in the present application, although it is believed to be new; but it is designed to claim it in a separate application.

I claim the application of the bitter water left in the manufacture of sea salt, or its equivalent, to destroy canker worms and other insects, in their attempts to ascend trees, as set forth.

SEED PLANTERS—J. H. Thomas and P. P. Must, of Springfield, Ohio: We claim, first, The use of flaring inclined gutter-shaped arms G3 G3, on the shaft, which is arranged in the hopper, G, and lift and agitates the grain, in combination with the peculiar construction of distributing slide described, substantially as and for the purposes set forth.

Second, The employment of the above wheat hopper, G, and its attachments, as described and shown, in combination with a grass seed hopper, H, and the flaring seed conductors, H', when said grass seed hopper and flaring conductors or spreaders, H', are arranged behind the wheat hopper, G, and so located that the back board, a, of the wheat hopper shall completely overhang the same, substantially as and for the purposes set forth.

[By the first feature of this invention a more perfect agitation, lifting, and certain deposit of the grain in equal quantities, into the cells of the distributing slide, is accomplished, also a discharge of the same into the drill tubes. And by the second feature, grass seed can be planted at the same time that the wheat is planted in the rear of the drill tubes, instead of (as usual) in front of the same, and thus the disadvantage of having the grass seed planted in the deep furrows with the wheat is avoided, and said seed can be planted on the surface, as it should be, in order to spring up speedily.]

CLOTHES' DRYER—Stephen H. Tift, of Morrisville, Vt.: I claim the arrangement of the light yielding bars, A A A A A, cords or ropes, D D D D, standard, B, and light yielding legs, C C C, substantially as and for the purposes set forth.

[This clothes' dryer consists simply of a standard with a revolving cap, from which a series of arms project out laterally. The arms are light and yielding, and are set slightly oblique to a horizontal plane. The clothes' lines are arranged on the arms so as to connect them together; and when the arms are sprung down to a horizontal line by the weight of the clothes, they draw the clothes' line taut. The legs of the standard are flexible, so as to yield with the weight of the clothes, and thus allow the standard to descend, so that its lower end may rest on the floor and support the whole structure and the weight upon it. By thus constructing the clothes' dryer with oblique yielding arms and yielding legs, it can be made exceedingly light and cheap. We regard this as a very cheap, simple, and useful contrivance.]

MACHINES FOR CLEANING GRAIN—B. T. Trimmer, of Rochester, N. Y.: I claim giving the screens an unequal, reversible, gyratory motion, for the purpose of neutralizing the centrifugal force of the grain, and retaining it in the center thereof, in combination with the vertical vibratory motion, by means of the double reverse-acting cranks, n n, cams, s, and springs, m, or their equivalents, arranged and operating substantially in the manner and for the purpose set forth.

I also claim the combination and arrangement of the blast generator, B, triple blast tubes, D E and F, and their valves, f h, and movable diaphragm, s, with the screen box, J, and return spouts, P and Q, operating conjointly, for separating, screening, and returning the grain, and for increasing, diminishing, and modifying the blasts for the various purposes required, substantially in the manner set forth.

I further claim the adjustable deflector, R, in combination with the screen box, J, for returning the lighter grain through the screens, and re-subjecting it to the blasts, or discharging it as refuse, as described.

TRIANGULAR BRACE FOR LOCKING THE PANELS OF FIELD FENCES—Charles Van De Mark, of Oak's Corners, N. Y.: I do not claim the panels, or the mode of locking the same together, as the same are embraced in my aforesaid patent.

Neither do I claim triangular braces to support the panels of a fence, as the same have before been used.

But I am not aware of any previous instance in which a triangular brace has been introduced within an opening in one panel, in such a manner that the insertion of the end locking board of the next panel through the same opening shall hold the aforesaid triangular brace in the proper position, and also connect the panels together.

I claim as an improvement on the said patent of June 2d, 1857, the brace, i, constructed as specified, when combined with panels formed as set forth, with the end locking pieces, and set together in a straight, or nearly straight line, as described.

BUTTER MACHINE—Ellyson Yerby, of Washington, D. C.: I claim the slide, g, as a disconnecting apparatus, when said slide is used in combination with the conical pan and agitator, the said pan and agitator constructed substantially as and for the purpose described.

RAILROAD CAR BRAKES—Wilbur B. Wait, of Portsmouth, N. H.: I do not claim the use of brake chains, and connecting brake rods, as the same are now generally applied to car brakes.

But I claim the combination and arrangement of the frame, F, together with the connecting joints, Q Q or P P, with latch, L, attached, the shaft, I, with drum, C, attached, connecting with the shaft, A, by an eye, R', the belt, D, passing round the axle, E, the lever, K, the levers or arms, C, with brake chains, d', and rods, E, attached, the guide bar, G, and slot, O, the main shafts, M A, and g, with cog wheels attached thereto, and the slots, N, and eyes or links, R and R', in the manner substantially as shown in Figs. 1 and 2, and as described.

MAKING STEEL ROLLERS—Henry Waterman, of Brooklyn, N. Y.: I claim my improved compound rollers, consisting of the steel shaft, A, the iron cylinder, B, and the steel cylinder, C, forming the surface when fitted together and hardened in the manner specified.

ALARM GAUGE FOR STEAM BOILERS—Joseph Whitmore, of Lowell, Mass.: I claim the combination of the steam whistle, W, valve, F, rod, L, spring, K K', and its connections, and box, D, when used in connection with a steam boiler for the purposes and substantially as set forth.

DRAWING INSTRUMENT—William W. Wythes, of Philadelphia, Pa.: I wish it to be understood that I do not desire to confine myself to the precise form or arrangement of the several parts illustrated and described.

But I claim, First, Causing the adjustable pencil-holder to revolve as the beam is turned on the adjustable centre, m, by means of the disk, G, and endless chain, I, with the wheels and pulleys (or their equivalents) acting in conjunction with the same, for the purpose specified.

Second, The adjustable sliding piece, K, with its spindle, q, and adjustable pencil-holder, L, when constructed and arranged as and for the purpose set forth.

Third, The spindle, d, with its adjustable bar, N, and pulley, f, and the spindle, e, with its adjustable bar, N, and pulley, h, in combination with the adjustable point, m, and endless chain, I, the whole being arranged on the beam, A, substantially in the manner and for the purpose specified.

PUMPS—Henry Zeng, of Elizabethport, N. J.: I do not claim, broadly, the employment of a water chamber in the upper part of the pump cylinder, nor broadly the employment of a valve therein.

But I claim the combination of a loose plate or disk valve, F, with the piston rod, D, in the upper part of the cylinder, B, substantially as and for the purpose shown and described.

MANGLES—D. Cumming, Jr. (assignor to D. Cumming, Sen.), of Mobile, Ala.: I do not claim, broadly, the employment or use of pressure rollers for mangling clothes, for they have been used and arranged in various ways for accomplishing the purpose; but so far as I am aware, they have been used in connection with a horizontal bed or plane surface on which the clothes were placed, thus making a cumbrous machine.

What I claim is the employment or use of the cylinder, B, having its axis fitted in fixed bearings, a, the cylinder, C, having an elliptical surface, c, on a portion of its periphery, and having its axis fitted in sliding bearings, b b, and the wedges, D D, having weights, F, attached, the whole being arranged to operate as and for the purpose set forth.

[This invention consists in the employment of a rotating cylinder having fixed bearings—a rotating clothes cylinder and a cylinder with a segment removed so as to form a plane face; the latter cylinder having its axis placed in yielding or adjustable bearings, which are acted upon by wedges and weights so that the clothes may be operated upon or mangled in an expeditious and perfect manner.]

KNITTING MACHINES—Joseph P. Delahunty, of Cohoes, N. Y., assignor to himself and Edgar S. Ellis, of Troy, N. Y., assignor to Clark Tompkins, of Troy, aforesaid: I claim so arranging or adjusting the presser and connecting it with the yarn running to the needles that, when the yarn breaks or fails, the presser will move and cease depressing the barbs of the needles, and thereby prevent the casting off of the "quarter" or web, substantially as set forth.

STOVES FOR BURNING SOFT COAL—Merriman P. Dorsch, of New York, N. Y., assignor to Peter Dorsch, of Schenectady, N. Y.: I am aware a perforated cone for admitting jets of air to fuel is not new. I am also aware that a rosette furnished with holes has been used. I do not, therefore, claim either of these things individually.

But I claim the combination of the perforated cone and rosette when arranged with regard to the fire box, and operating as set forth and represented.

STEAM HEATING APPARATUS—Thomas Gordon (assignor to Charles H. Bullard), of Trenton, N. J.: I claim, First, The application of water-joints to the safety valve and steam pipes, substantially as set forth.

Second, The construction of the throttle valve, P, with an inverted cup, l, in a water-joint or case, substantially as described for the purpose set forth.

Third, Connecting the dome, D, with a steam pipe, by a water supply pipe, e, as and for the purposes specified.

Fourth, Arranging at the bottom of the radiator a caloric valve, substantially as described for the purpose specified.

GAS REGULATORS—Charles F. Holzer (assignor to William B. Smith and William Bromwell), of Philadelphia, Pa.: I do not claim the combination of an inlet and outlet chamber, a valve, an inverted cup and a spring, as I am aware that such combination is used in most gas regulators.

But I claim the peculiar arrangement as described of the inlet and outlet chambers, the valve, the inverted cup, the spring and guide pin, whereby the spring and the guide are effectually protected from contact with the gas, and provision is made for the return of all liquid matter through the inlet pipe, as fully set forth.

SEWING MACHINES—Albert H. Hook (assignor to Union Sewing Machine Company), of New York, N. Y.: I claim a narrow space between the looper finger, e, and arm, g, in combination with the rough surface on g, the whole being constructed and arranged substantially as set forth.

ILLUMINATING GLASSES FOR VAULT COVERS—Thaddeus Hyatt (assignor to George R. Jackson & Co.), of New York, N. Y.: I claim combining glasses of an inverted pyramidal, polygonal or conical form, with the sash or metallic portion of an illuminating vault cover, or its equivalent, for the purpose of producing a wide spread and perfect diffusion of the rays of light which may pass through said cover into the apartment beneath, substantially as set forth.

MACHINES FOR PEGGING SHOES—Leander Lackey, of Sutton, Mass., assignor to himself and Elmer Townsend, of Boston, Mass.: I do not claim holding the last or shoe up to the pegging mechanism by means of a weighted lever and a standard connected together by a universal joint.

But I claim the combination of the heavy inertia block, P, with the weighted lever, R, and either the last or the standard for supporting the last, the same being for the purpose as specified.

I also claim the arrangement of the inertia block with reference to the lower bearings, K K, of the universal joint—that is, so that a vertical line passing through the center of gravity of the inertia block shall fall on one side of and at a distance from the axis of such bearings, the same being for the purpose as set forth.

I also claim combining with the inertia block and its universal joint a mechanism for revolving the inertia block twice while a sole on the shoe last is being pegged, such a mechanism as shown in the drawings, consisting of the flange, n, the griper, o, the connection bar, p, the lever, q, the pitman, r, and the cam, E.

I also claim so arranging and applying the last standard on the inertia block, that the position of the standard may be varied on the block in order to change the inclination or slant of the pegs as described.

I also claim arranging and combining with the peg feeding mechanism, substantially as described, a mechanism for receiving each peg and condensing or compressing it just prior to its being driven into the sole—such a mechanism is shown in the drawing, consisting of the slider, g', the hook, slide bar, m', the toggles, i' k', the pitman, b', and the mechanism for actuating the said pitman as described.

I also claim the combination of the wedged pitman, b', its side cam, d', the recessed post, Z, and the stud of the feeder, C, the same being the mechanism for feeding the shoe along.

I also claim combining with the feeding mechanism a mechanism, substantially as described, for imparting to the shoe last an intermittent, reciprocating lateral motion, such as will cause the machine, when in motion, to insert two rows of pegs in the sole—such a mechanism as shown in the drawings, consisting of the pitman, d2, the notch, x', the recess, z', the stud, e3, the heart cam, a2, and the plate, v'.

RAILROAD CAR SEATS—John McMurtry (assignor to James B. Clow and John Best), of Fayette county, Ky.: I do not claim the quadrants, d d and P P, with their thumb screws separately. Neither do I claim the mode of hinging the seats, B and f, together, as these devices are not new.

But I claim the combination and arrangement of the seat back, footboard and quadrants, for the purpose of making the seat adjustable and reversible at pleasure, substantially as described for the purposes set forth.

BURNERS FOR VAPOR LAMPS—G. W. Randall (assignor to Reuben J. Todd), of Boston, Mass.: I claim the application of the valve and its seat to the generator and the button or heat absorber, the same consisting in making such valve and seat tapering, and arranging them in the generator, and maintaining them in contact by the action of a spring, and connecting the valve with a separate button in such manner that the button, besides performing its office of absorbing heat from the flame, may serve with the spring to maintain the valve in place against its seat and to rotate the valve as specified.

REVOLVING FIREARMS—Edward A. Raymond and Charles Robitaille (assignors to themselves, Jno. B. Richards and Thomas K. Austin), of Brooklyn, N. Y.; We do not claim any part of the invention of Pettengill secured by patent.

But we claim, First, The manner specified of controlling the motions of the lever, h, and spring, i, by means of the spring, m, roller, q, and incline, 10, as and for the purposes described and shown.

Second, We claim locking the chambers, d, by the end of the lever, h, taking the triangular recesses, 8, in the rear of the chambers, as said lever completes its upward movement for the purpose and as specified.

RE-ISSUES.

MACHINE FOR FOLDING PAPER—S. T. Bacon, of Boston, Mass., assignee of A. Hardy, of Boston, Mass., assignee of J. North, of Middletown, Conn. Dated April 15, 1856: I claim, Firstly, Producing the fold over a stationary knife or straight edge by pressure upon the sheet when in contact with the knife edge, substantially as described.

Secondly, The use of nippers so constructed as to fold the sheet over the knife edge, seize it and carry it to its proper position for receiving another fold, substantially as described.

Thirdly, The method described for releasing the sheet from the nipper.

Fourthly, The adjustable check and the mode of releasing its hold by the advance of the nippers, as set forth.

Fifthly, Attaching the stationary knives to the reciprocating carriage, as set forth.

Sixthly, The combination of the crank, K, slotted connecting rod, M, lever, N, and link, P, substantially as described for operating the reciprocating carriage.

Seventhly, Hanging the cutting rollers, on a bar vibrated and checked as herein described.

Eighthly, The arrangement of the (T) levers, with double concentric shafts as described, for operating the nippers from one cam, as set forth.

CASTING SKEINS FOR WAGONS—Andrew Leonard, of Kenosha, Wis. Dated Feb 24, 1857: I do not claim to have been the first to make thimble skeins as such.

But I claim the combination of a whole thimble skein pattern, b, with a loose collar pattern, l, substantially as specified and as shown in Fig. 1, for the purpose specified.

I claim, also, the vertical position of green sand cores for thimble skeins, when molded and combined at their base with the mold, substantially in the manner specified; in combination with the adjusting top of the cores at (s) by the hand, after the mold is completed, except the casse, whether core bars or their equivalents for the purpose are used, substantially as described and shown.

Literary Notices.

AMERICAN ENGINEERING. By G. Weissenborn, Civil Engineer, 131 Fulton street, New York. Nos. 4 to 12—Parts 1 and 2. This is a large work containing beautifully executed lithographs of American machines and engineering works, with all the constructive details and necessary description. In the present numbers we find the details of the steamship Knoxville, with elevations of the arrangement of her engine room and boilers, and all the information that would be required to construct a similar engine. There are also full and detailed illustrations of the passenger locomotive Talisman, built at Paterson, N. J., drawings of the steamer Francis Skiddy, with accurately drawn elevations of her beam engine, with a cylinder 70 inches in diameter and 14 feet stroke. The steam fire engine Missouri is finely drawn, and the tender of the Talisman and the engines of the Caroline, of Havana, are all contained in these numbers. The accompanying letterpress contains exactly that kind of information which every engineer and mechanic wants to know, not being confined to mere details of the drawings, but embracing every subject in connection with the work that is incapable of illustration by the artist or draughtsman. This work when complete will be the most perfect of its kind ever published, and will form the basis, we hope, of a system of scientific instruction applied to all the various branches of the engineering art. The subscription is only $1 per number, and we hope that it will find its way into the hands of all who take an interest in the progress of steam in America, of which it forms a perfect history.

BLACKWOOD'S EDINBURGH MAGAZINE for July is excellent, the "Soldier and the Surgeon" being the title of the first article. It is an able review of the sanitary condition of the British army, and should be read by all who have any taste for military matters. The other articles are very good, and "What will he do with it" increases in interest every number. L. Scott & Co., 79 Fulton street, New York, are the publishers.

HUNT'S MERCHANTS' MAGAZINE AND COMMERCIAL REVIEW for August. No. 142 Fulton street, New York. This, the ablest commercial periodical published in America, contains in this number a valuable and interesting condensation of the work of Baron Von Plenker, chief director of the Austrian tobacco manufactories, upon the manufacture, trade and consumption of the "weed." The various kinds, qualities and properties of alcoholic beverages, called spirits or distilled liquors, have their share of attention, and much interesting information is given concerning their manufacture and adulteration. Full, as usual, of mercantile news, this is a good number of an excellent magazine.

HENRY WARD BEECHER'S SERMONS. Two recent sermons of this eloquent preacher are published in pamphlet form—price ten cents—by Long & Farrelly, 23 Ann st., New York.

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New Inventions.

Protection of Horses against Flies.

In view of the miseries attending the best cared-for horses at this season of the year, it behooves all who can in any manner alleviate them, or in any manner add to the comfort of this noble animal, to take the largest possible field, and seize every opportunity for the spreading of his benign influence. We therefore lay before our readers an old method of protecting horses against flies, which has been again brought to mind by the *Irish Farmer's Gazette*, and which is, in substance, as follows:—

"Previous to taking the horse out of the stable, sponge him well with a decoction of laurel leaves about the head, loins, and other sensitive parts. The decoction is made by boiling the leaves in water for a considerable time, and being poisonous, it should be kept carefully when not desired to be used."

This is said to be a preventive to his being stung and annoyed with horse-flies. A late statement in the *Moniteur d' Agriculture*, of Paris, reminds its readers that M. de Serre, the famous French agriculturalist, ascertained that a decoction of the leaves of the walnut tree, applied to horses and other animals as a wash, will be found complete protection against the sting of all insects. These are simple remedies for a serious annoyance, and we would recommend their immediate trial.

New Water Wheel.

The invention which the accompanying illustration depicts, and the following description elucidates, enables the wheel to be raised and lowered as circumstances may require, and the water can be directed into the buckets, at any point of the wheel within the range of its adjustment. The buckets are also peculiarly constructed, so as to obtain a large percentage of power, and the whole wheel is simple and economical.

Fig. 1 is a perspective view of the wheel, Fig. 2 is a detached perspective view of a bucket, and Fig. 3 is a section of the same.

A represents a circular cast-iron plate, which is fitted loosely on a vertical shaft, B, which has a square base, so that the wheel and shaft will rotate together, and the plate be allowed to rise and fall on the shaft. On the lower part of B an inverted conical hub is formed, and through the plate, A, four screws, *b*, pass vertically, the lower ends of the screws resting on the conical hub. The shaft, B, is stepped into a crossbar on the frame, *c*, and the upper end has its bearing in a crossbar, *d*. The upper surface of A has radial grooves in it to receive the arms, *e*, and they project far enough from the periphery of A to hold the buckets, C. These buckets are of cast-iron, and are of peculiar form, which is better seen in Figs. 2 and 3. The buckets are formed each of two parts, one part receiving the percussive force of the water, and the other part receives the force from the gravity as it leaves the bucket. The upper part, *f*, of the buckets are formed of a top piece, *g*, a back, *h*, and side, *i*, and a bottom-piece, *j*; the top piece, *g*, and side, *i*, project from the back, *h*, so as to form the angles with it, and the bottom piece, *j*, only extends about half-way across the bucket, a space, *k*, being allowed, which space forms the orifice of the lower part, *l*, of the bucket. The lower parts, *l*, are of scoop form, the bottoms being inclined at about an angle of 45°. The outer edge of the back, *h*, of each bucket has an eye, *m*, through which the arm, *e*, passes, and the front edge of the side, *i*, is notched to receive the arm of the bucket immediately before it. Each bucket, therefore, serves as a bearing for the arm immediately before it, and each bucket is bolted to its arm by bolts, *a*. The plate, A, and buckets, C, are covered by a plate. D represents the sluice through which the water passes to the wheel, and E is a cylindrical case in which the wheel is fitted. The sluice, D, is made to communicate with the case, E, by means of an adjustable mouth, F P, which can be raised up and down by lever, *t*, and link, *s*. G is a sluice gate that regulates the quantity of water.

The operation is as follows:—The wheel may be raised or lowered within its case, E, by the adjusting of the screws, *b*, and the water is directed properly into the buckets, C, at whatever height the wheel may be placed by adjusting the mouth, F, by moving the lever. *t*. The wheel, therefore, may be adjusted according to the height of the water, so that an uniform fall may be obtained. The water first acts against the upper parts, *f*, of the buckets, by impact and in passing down into the lower parts, *l*, of the buckets, and out from them a force is obtained by the weight or gravity of the water, and owing to the form of the buckets, as shown, the water is allowed to pass very directly through the buckets, so that there is but little power lost by friction. The buckets by being attached by arms to the center plate, arranged as shown, it renders the construction of the whole extremely simple, and susceptible of being readily repaired in case of a bucket being broken.

It is the invention of John Custer, of Findlay, Ohio, from whom any further information can be obtained. A patent was granted May 5, 1858.

CUSTER'S IMPROVED WATER WHEEL.

Fig. 1.

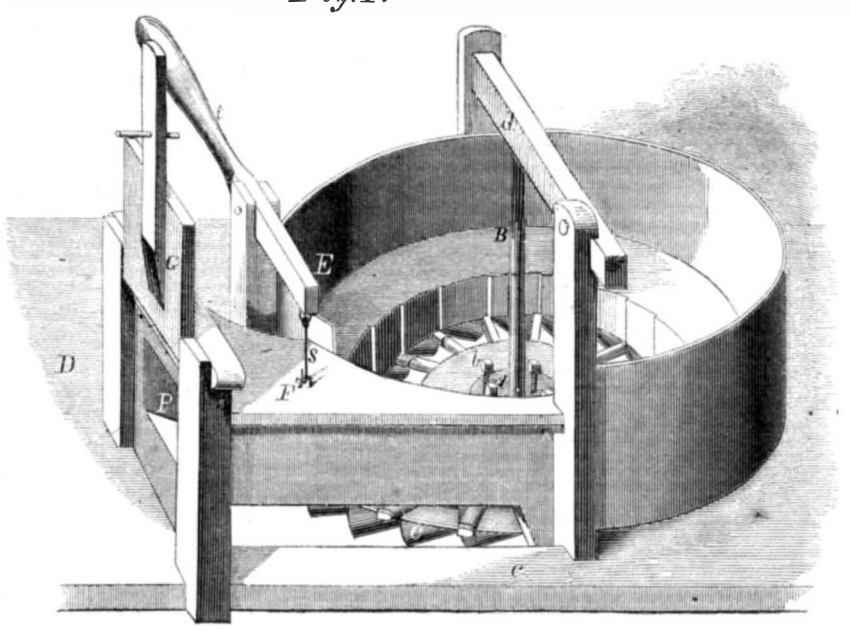


Fig. 2

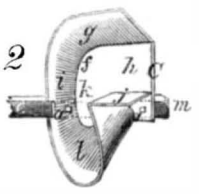
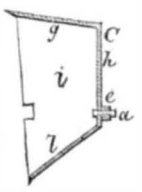
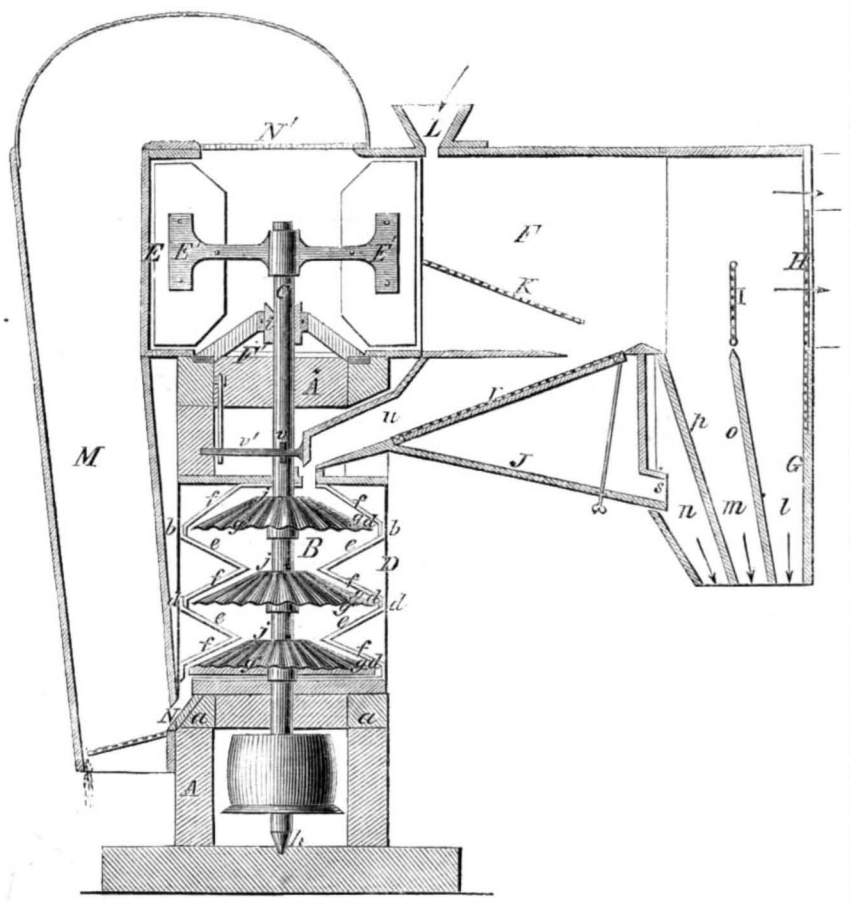


Fig. 3.



DONEHOO'S SMUT MACHINE.



The object of this invention is to combine in one machine the great requisites which are essential to clean wheat from all foreign substances before grinding, namely, a capability of separating all lighter foreign substances by blast; separating by screening all such foreign material that will not pass off by the blast; depriving the grain of all smut which may not have been blown off before arriving at the scouring cylinder, and lastly, depriving the wheat by a light suction, of dust, as fast as it passes from the scouring cylinder, without lifting and interfering with its discharge. How these points are attained will be seen by the following description, reference being made to the illustration, which is a vertical longitudinal section of the invention.

A is the frame of the machine, and B is the scouring chamber, supported by the cross-pieces, *a a*. This chamber is formed of a series of chambers matched together as seen at *b*, and the castings are of such a shape as is indicated by *f e d*, the surface of *e* being plain, while that of *f* is fluted to correspond with the flutings, *g*, on the conical scouring plates, *j*, that revolve within the chambers, *d e f*, by being supported on and attached to the central vertical shaft, C. The chambers and scouring plates are encased by an outer cylinder, D. By thus forming the scouring plates conical, and the chambers to match, the grain is subjected to a very large scouring surface, retarded in its progress, and its gravity still made available to assist in its escape as fast as acted upon.

E is the fan cylinder, within which the fan, E′, arranged on the shaft, C, rotates. The fan case terminates in a horizontal blast spout, F, which gradually flares laterally as it reaches its discharge end. F′ are two valves at the bottom of the fan case for admitting more or less air to the fan, accordingly as it is desired to have the strength of the blast. G is the vertical spout for separating the various qualities of screenings from one another; it is placed in the end of the blast spout, and is closed at top, but open to a certain extent on the other sides; its lower end is divided into three passages, *l m n*, by means of partitions, *o o*. H I are two sliding screw gates formed partly of wire gauze, and they are made adjustable, and serve for separating the different qualities of screenings from one another, as soon as the wheat is separated therefrom, and by having them adjustable they can be regulated in hight to suit the specific gravity of different kinds of wheat. J is the shoe which receives the wheat as it falls through the blast from the wire guaze chute, K, of the hopper, L. This shoe is formed of two inclines, *r s*, *r* being of wire gauze and hinged at *u*, and capable of adjustment by a set screw, and the other incline, *s*, allowing the cockle that falls through *r* to pass into the spout, G. The advantage of having this incline adjustable is that it can be made more or less inclined to suit the amount of cockle in the wheat, the greater quantity of cockle requiring a less incline in order that the wheat may remain longer in contact with the incline, so as to separate the whole of it. Another advantage is, that, the shoe itself does not require adjusting, and consequently the space between the fan case and the scouring chamber does not require to be great, in order to allow for adjustment. The vibration of the shoe is effected by means of a cam, *v*, on the driving shaft, this projection striking the rod, *v′*, in the revolution of the shaft. M is a suction spout, leading up from near the bottom of the frame to the fan case, and communicating with the scouring chamber by a passage, N, and with the fan chamber by a passage, N′. In the opening, N′, is a valve which regulates the draft through the spout, and thus avoids the lifting up of the grain through the spout by too great suction. At the bottom of the spout, there is, as usual, an inclined wire gauze screen or chute for the grain to pass over in its discharge, and so be deprived of its dust just before leaving the machine.

This most perfect smut machine is the invention of Daniel M. Donehoo, of Hookstown, Pa., who will be happy to furnish any further particulars of the machine or other business. It was patented March 16, 1858.

AGRICULTURAL EXHIBITION.—The Agricultural Association of Upper Canada holds its annual exhibition at Toronto on the four days included between Sept. 28 and Oct. 1. On the list of prizes which we have received, there is this remark, "Open to all Canada." Why not be liberal, and open your prize list to all America?

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Scientific American.

NEW YORK, AUGUST 7, 1858.

Mechanics' Fairs.

Among other improvements which mark the character of the present age is the attention bestowed by men of sense and education on the highly useful and liberal policy of providing popular exhibitions, illustrating in themselves the progress, and in many cases the history of the several branches of sciences and the mechanic and more polite arts. Such exhibitions not only afford satisfaction to every lover of his country, and every friend to the welfare and prosperity of mankind, but impart to the thousands who visit them the most impressive, useful, and comprehensive lessons in the history of invention and the arts, and their application to the various branches of industry and every-day life. In viewing the miniature construction and operation of the most intricate piece of machinery, the untutored mind is enabled to grasp and comprehend its nature and operation, and appreciate its benefit, and the ingenuity and skill expended in its production, and to thus acquire a knowledge which it would be difficult to convey through the more slow, tedious, and (to many) distasteful processes, laid down in books. In order that the ingenious and useful contents of these exhibitions may be presented in the proper form and order, equally to the emolument of the learned and the less perplexing of the unskilled and more ignorant observer, we would suggest to those having them in charge, as well as to the exhibitors, the observance of one or two rules, which will tend to destroy the prejudice existing against them, and enable them to fulfil the praiseworthy objects they are designed to accomplish.

To render such a fair or exhibition effective in the particulars we have mentioned, it is necessary that it should be what its name implies, under the superintendence of pecuniarily disinterested and impartial men, whose sole object is to benefit science and the mechanic arts and their fellow men, by displaying to the world, in the most familiar and instructive manner, the manifold results of the ingenuity and skill of the inventive mechanics and others, with which our country fortunately abounds. These men should be practical, and beyond reproach in their characters, and of such occupations and stations as to properly represent the several classes and branches of business to which the exhibitors and the results of their skill and genius belong. In the selection of committees to examine, report upon, and award testimonials of superiority to meritorious inventors, skillful mechanics, and the other marked producers of articles on exhibition, a sole regard should be had to their ability and honesty to faithfully fulfil the trust reposed in them. It is too often the case that the prominent members of agricultural and mechanical fairs are not only unfitted for the responsible positions they hold, but are mainly of that class of men who assume such stations solely with a view to notoriety, and to their own emolument, or the emolument of others; or who, being deficient in the knowledge and judgment necessary to distinguish the meritorious from the unskillful, are governed by the designing, or their personal partialities. Hence it is that the annual fairs and other exhibitions held at different sections of the country, which, if properly carried out, would produce great good and rational enjoyment, are diverted from their purposes, and made to injure, rather than encourage science and the mechanic arts.

Another rule which we would commend to the attention of the superintendents and exhibitors, is that of proper taste and judgment in the method of the arrangement of the articles being exhibited, so as to properly display their character, and enable them to be fully understood. They should be comprised together in the classes to which they respectively belong, with a distinct space between each other; and where they are of such a nature as to prevent them being understood from the descriptive title or explanation marked on them, a person should be in attendance to describe them and their points of excellence. When a series of machines are on exhibition for performing the different operations necessary in the fabrication or treatment of a particular article, they should be arranged in the proper relative positions with each other, to illustrate the various successive stages through which it passes, with samples to show the effect produced at each stage, and in this manner a full knowledge could be acquired, in a short time, of all the details of the manufacture of the most useful articles and fabrics; as, for instance, the familiar articles of sugar and cotton, through the various operations necessary to change them from the crude state they appear in when in the forms of fresh cut sugar cane and cotton bale, to the respective and beautiful granulated and woven states necessary for consumption and wear.

We trust that these few and brief suggestions will be received in the same spirit of sincerity in which they are dictated, and that those really having the interest of the arts and sciences and their fellow men at heart, will at once set to work in the same spirit, to remove the evils attending the associations having these fairs in charge; and by disarming suspicion inspire that confidence and attachment with which it is indispensible to the public welfare that they should be regarded.

To make Brass and Alloys.

The fusion of metals and the mode of mixing them in the crucible to form alloys require much care, because alloys are very difficult to make, especially when the metals, of which they are composed are of such a character as have a kind of antipathy for each other—such, for instance, as copper and lead. The method to pursue in mixing them is as follows:—First, melt the least fusible of the metals (that requiring the highest temperature) of which the alloy is to be composed, and after it is fused, keep up the heat until the metal acquires such a temperature as will bear the introduction of the other metals without instantaneous and sensible cooling. After this, introduce the other metals in the order of their infusibility—the most difficult to melt first. Whatever may be the proportions of the metals, it is indispensable to melt the most refractory first, and especially when it is to be the principal base, such as copper in all brasses. The liquidity of this metal gives, indeed, the measure of the temperature necessary to complete the alloy All the metals to be added, after the most refractory is first added, should be heated in the flame of the furnace, in order to elevate their temperature, so that there should be as little difference as possible between the heat of the molten metal in the crucible, and that to be added to it. This is especially necessary when a volatile metal, like zinc, is to be added to copper, because when it is melted very suddenly, it is liable to crack the crucible. The contents of the crucible must be stirred well after the introduction and fusion of each of the component parts of the alloy. When all are added, the crucible is covered, and an increased heat given to the fire—intense according to the difficulty with which the metals enter into fusion. In alloys containing a large proportion of zinc, the surface of the metal in the crucible should be covered with a thin layer of charcoal powder. This precaution is not necessary, unless the alloy contains a metal requiring a high temperature for its fusion, as, for instance, copper or iron.

In alloys containing tin, however, a layer of charcoal placed in the crucible is liable to convert part of the metal into dross, therefore ground clean sand should be used in place of it. All alloys should be vigorously stirred when run into molds. The crucibles employed should be thoroughly cleaned after each operation. Such are the general conditions which should be followed in making alloys. Copper melts at 1920° Fah.; zinc at 700° Fah.; lead at 590° Fah.; tin at 450° Fah.; cast-iron at 2100° Fah. A dull red heat is estimated at 1489° Fah.; a bright red heat at 1830° Fah., and a white heat at 2910° Fah. In practice it is generally found that a minute quantity of old, introduced into a new alloy imparts to the composition greater homogenety. Alloys should be first cast into ingots, then re-melted to be cast into boxes, or any article for which they are required. Why this should be done is simply a matter of practical experience, it having been found that castings of bronze and brass give, at the second melting (when the proportions of the metal are correct), a cast of a superior grain and a greater soundness.

An alloy composed of zinc, tin, lead and copper, should be made by forming the three first metals into an alloy and casting them into ingots, then melting the copper, and adding this alloy to it. By this mode of making the copper alloy, a very superior casting is obtained.

In England where the manufacture of brass is carried on very extensively, the furnaces employed for smelting have movable covers of a dome shape. The crucibles employed are of Stourbridge clay, one foot deep and eight inches in diameter, each furnace holding nine crucibles. The duration of a charge is twelve hours; the fuel used is coal and coke, and 64 pounds of copper and 88 pounds of ground calamine (zinc ore) are the proportions of each charge. When a heat of twelve hours is completed, the crucibles are taken out with tongs, the brass is skimmed to remove the slag, and the molten alloy then run into ingot molds. Muntz metal, so well known, is composed of 60 parts copper and 40 parts of zinc. Muntz obtained a patent in England for the application of brass sheathing for ships, and when he died a few years since, he left a fortune of £600,000—about three millions of dollars—all made by his patent. He was an able business man, and knew how to work his patent to the best advantage, hence his great success.

A brass composed of 4.69 copper and 31 zinc is very suitable for hammering. A brass of 5.64 copper and 36 zinc is useful for brazing iron; 6.75 copper and 25 zinc; 7.5I½ copper, and 27¼ zinc. In general, common brass may be calculated to contain 2 parts of copper and 1 of zinc. Dutch metal is composed of 84.5 copper and 15.5 of zinc. It is of a pale yellow color, and so malleable as to be capable of beating out into leaves, and so thin as to be employed for cheap gilding. Chinese brass is composed of 56.9 copper, 38.27 zinc, 3.30 lead, 1.08 tin, and 1.48 iron. It is very strong and durable. A little lead improves brass for turning purposes, and it is usual to put it in just before pouring out, and about three ounces of lead to ten pounds of brass is the amount used.

Fine brass wire is woven into fabrics like those of cotton yarn for sieves, bolting cloths, &c. Tin wire is made into a warp for the loom, the weft wound on a spool, and placed in a shuttle which is thrown by the weavers by hand, from side to side, in the same manner that old-fashioned hand loom cloth weaving was executed. Two men are necessary to work one loom, each throwing the shuttle alternately. Brass wire has some peculiar properties. When annealed it is very soft, easily bent, and woven in the loom, but it must be rendered elastic for common use. The elasticity or spring is imparted to it by stretching and heating in a frame; in other words, "the spring is licked into it." When kept for a considerable length of time in a state of high tension, brass wire is liable to snap suddenly. It should therefore never be employed, as it oftentimes is, for suspending chandeliers and such like objects.

NITRE BEDS.—At Bahia, in the Brazils, near Sao Francisco river, 180 leagues from the city of Bahia, a great natural deposit of nitrate of soda has been discovered, extending sixty miles along the valley.

Painless Extraction of Teeth.

Various methods have been resorted to for the purpose of alleviating the excruciating agony consequent upon the extraction of teeth; but as the general anæsthetics are in all cases tedious and troublesome in their application, and often attended with fatal and dangerous results, sufferers, rather than experience the momentary pain of extraction, or run the risks of general or local anæsthesia from the means heretofore employed, impair their health by retaining in their mouths diseased teeth and roots. To avoid the dangerous results of chloroform, and to do away with the employment of the not either harmless or efficient process of freezing mixtures to the jaw, Mr. Jerome B. Francis, of Philadelphia, has invented a method of producing local anæthesia by the application of an electric current, and through this means to effect the painless extraction of teeth. The application is simple, and consists in attaching to the forceps the negative pole or flexible wire of the ordinary electro-magnetic machine, or graduated battery, and placing the metallic handle of the other or positive pole in the hand of the patient, and by this means to cause an interrupted current to traverse the body of the patient and the extracting instrument. The intensity of the current is previously graduated while the patient grasps the forceps and handle, until it is just distinctly perceptible, and the circuit through the tooth is not completed until the moment at which extraction is to begin. This interruption is said to be desirable until the forceps are placed upon the tooth, when the circuit is formed, and the extraction made at once. How this annuls pain we cannot determine, but that it has, in a large number of cases, we are satisfied from the representations of able dentists in this and other cities. This novel process of extracting teeth was patented the 25th of May, 1858, and the claim is to the combination of the electro-magnetic machine, with the dental forceps.

Blanchard's Steam Engine.

The principle that a fire can be made to give more heat, and the fuel more economically burned, by means of a mechanically forced blast than by a chimney draft, has been thoroughly demonstrated by Mr. F. B. Blanchard, of this city; and when the heat which is not used in the boiler is made to superheat the steam, and afterwards heat the feed water, a still greater economy and consequent saving of fuel is obtained.

The *John Faron*, a steamboat of 250 tuns, not built on a model adapted for high speed, has had Mr. Blanchard's improvements applied to her, and so well and economically is the fuel burned that a small six-inch stove-pipe is sufficient to carry off the products of conbustion. A few days ago we had an opportunity of personally observing the value of this improvement on board this boat, during one of her ordinary passages from this city to Haverstraw, on the Hudson—a distance of forty miles. She made this distance in 3¼ hours each way, at an expense of 1,375 lbs. of fuel the forty miles—a most astonishingly small quantity of coal for a boat of her size and build. She lies at the village of Haverstraw all night, and so well is the heat cared for and fostered that without firing up during twelve hours, the steam was kept up, and only lost about ten pounds pressure from six o'clock one evening to the same hour next morning. In a few weeks we shall give engravings and a full description of this valuable invention.

Petition for Extension of Patent.

P. E. Sickles has petitioned for an extension of his patent for opening and closing valves of steam engines, which expires on the 19th of October, 1858. The petition will be heard on the 4th of October next, and all persons opposing the extension are notified to show cause, if any they have, why it should not be granted. The testimony will be closed on the 20th of September, and rules for taking the same can be had by addressing the Commissioner.

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Norton's Gossamer Cartridge.

One of the most practical inventors at the present time in England is Captain Norton, who has for many years turned his attention chiefly to the improvement of implements of war, and who has in the course of an active life produced so many inventions that we can only enumerate a few of them, viz.: an elongated rifle shot and percussion shell; a percussion hand grenade, for the protection of private dwellings in case of riots; a railway guard and passenger signal; rifle fire shot; a safe way of fixing percussion appliances in the mouth of rifle shells for rifle cannon; concussion fuze; liquid-fire rifle shell; percussion blasting cartridge; artificial stone rifle shot; improved cordage; fog alarm signal; and the subject of our illustration, the gossamer cartridge, which we copy from the London *Engineer*.

Fig. 1

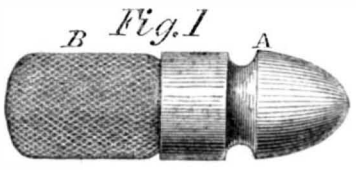
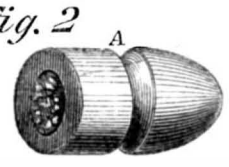


Fig. 2



The object of this cartridge, B, is to prevent the necessity of the soldier biting off the end of the cartridge, a very injurious operation. The cartridge is made by putting the powder of the charge in a small bag or cap of thin paper without any previous preparation of the paper, and then adding strength to this thin covering by enclosing it in a small piece of common cotton net as shown in the illustration, the cavity of the shot, A, being roughened out, for the purpose of readily attaching the cartridge to it.

An experiment was lately tried with cartridges constructed upon this principle, with the ordinary Enfield rifle, and it was found that without puncturing or piercing the cartride previous to loading, the flash of the percussion cap was amply sufficient to penetrate the thin paper through the opening of the network, and fire the charge. The soldiers of the fort who witnessed and tried the experiments were much pleased with the cartridges, as being a great improvement on those at present in use. On firing the rifle the net is carried out, leaving no residue whatever in the barrel. The net secures the thin paper that encloses the gun cotton or gunpowder, and prevents it from bursting when pressing the gun cotton or gunpowder into it. Major Straith, professor of fortification, referring to some experiments he had made upon cartridges both in paper and linen, and of which the present invention is an improvement, states that "the motion of biting the cartridge being saved, time is saved in loading, and the entire charge, without the usual waste, is always delivered into the piece." In making the present cartridge the thin tough paper is first placed with its center on the point of the mandril or former, and the net in the same manner over the paper, both together are then pushed into the tube mold, the ends are drawn down, and the mandril drawn out, the powder or gun cotton is then put in and the ends of the paper and net are tied up. In preparing it for Sharp's breech-loader, Captain Norton places a little gun cotton first in the lower end of the cartridge, and gunpowder over the cotton, the fire from the cap being certain to fire the cotton, although it may not always fire the gunpowder through the thin paper.

In a paper which Captain Norton read recently in the United Service Institution, London, he gave a full account of his numerous inventions, and the assembled *elitê* of Great Britain's army and navy listened with great attention to the man who had done so much to improve the so-called art of war.

Another Supposed Cause of the Potato Rot.

We some time since gave a theory in regard to potato rot, and a novel and curious method of preventing the same by the insertion of peas in the seed potato. We now find in the Buffalo *Commercial* an account of another cause for this destructive disease, discovered by Mr. Alexander Henderson, of that city. He thinks it is produced by an insect, the egg of which is laid on the skin of the potato, is invisible to the naked eye, but may be detected with a microscope, and is planted with the seed potato. The egg is hatched in about six days, and the young insect remains in the ground until he gets wings. In the meantime he is engaged in stinging the tubers, each perforation poisoning the root and begetting the rot. While yet in the ground, and as early as the tenth day of existence the young insects cohabit, and from the great rapidity with which they propagate, Mr. H. argues that the egg is deposited before the first emergence from the ground, although in case of cold wet weather, the insect sometimes leaves the vines and returns to the tuber. Only a few days are required for the entire destruction of the vine. The insect is remarkably industrious, but the destruction of the vine does not affect the tuber except to stop its growth. The *Commercial* gives further particulars, as follows:—

"Mr. Henderson states that he discovered the bug on the vines in 1850, but thought it was confined to them. During the last year he has found it on the tubers, and watched its effect upon them. It appears on the vines in from two and a-half to three months after planting, according to soil and manure—a richly manured soil producing the perfect insect sooner.

"A short time since Mr. H. left at our office a glass jar containing a sound and healthy potato plant, with which were confined somo six or eight of the insects alluded to. The insect itself we cannot describe scientifically. It is about half the size of the common house fly, of a brownish color, has six legs, two pair of wings, two antennæ, and a long strong proboscis. The insect was actively engaged upon the various portions of the plant, and in the course of twenty-four hours it was evidently diseased, the leaf becoming brown and mouldy, while the stalks, in the course of two or three days, suffered a putrescent change; in four days some of them fell over by their own weight, the stalks being swollen and softened in some places quite to a jelly of a sickly green color.

"If we put a stop to the planting of the egg with the seed potato, we stop the propagation of the insect. The egg being invisible, any means applied should be thorough, and reach the whole surface of the root. Mr. H. states that by sprinkling quicklime over the potato, as it is cut for planting, the moisture will dissolve the lime and bathe the tubers in a caustic alkali, which will destroy the eggs. At this time of the year the ravages of the insect may be prevented by packing the earth around the tuber firmly with the foot, which will smother the insect."

Origin of Brandy.

Brandy began to be distilled in France about the year 1313, but it was prepared only as a medicine, and was considered as possessing such marvellous strengthening and sanitary powers that the physicians named it "the water of life," (*l'eau de vie,*) a name it still retains, though now rendered, by excessive potations, one of life's most powerful and prevalent destroyers. Raymond Lully, a disciple of Arnold de Villa Nova, considered this admirable essence of wine to be an emanation from the Divinity, and that it was intended to re-animate and prolong the life of man. He even thought that this discovery indicated that the time had arrived for the consummation of all things—the end of the world. Before the means of determining the true quantity of alcohol in spirits were known, the dealers were in the habit of employing a very rude method of forming a notion of the strength. A given quantity of the spirits was poured upon a quantity of gunpowder in a dish and set on fire. If at the end of the combustion the gunpowder continued dry, enough it exploded, but if it had been wetted by the water in the spirits, the flame of the alcohol went out without setting the powder on fire. This was called the proof. Spirits which kindled gunpowder were said to be above proof.

From the origin of the term "proof," it is obvious that its meaning must at first have been very indefinite. It could serve only to point out those spirits which are too weak to kindle gunpowder, but could not give any information respecting the relative strength of those spirits which were above proof. Even the strength of proof was not fixed, because it was influenced by the quantity of spirits employed—a small quantity of weaker spirit might be made to kindle gunpowder, while a greater quantity of a stronger might fail. Clarke, in his hydrometer, which was invented about the year 1730, fixed the strength of proof spirits on the stem at the specific gravity of 0.920 at the temperature of 60 degrees. This is the strength at which proof spirit is fixed in Great Britain by act of Parliament, and at this strength it is no more than a mixture of 49 pounds of pure alcohol with 51 pounds of water. Brandy, rum, gin, and whisky contain nearly similar proportions.

Consumption of Tobacco in France.

The *Genie Industriel* says that it is difficult to account for the tremendous increase, during the last few years, of the consumption of tobacco in France; but that it has increased, and that enormously, the following figures will show:—In 1830, the value of tobacco consumed was about $13,000,000. In 1840, it had increased to $19,000,000. In 1850, it attained $24,000,000, and in 1857 the sum of nearly $35,000,000 was puffed away in smoke.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

Locomotive Grate.—Joseph W. Pole, of Philadelphia, Pa., has invented an improvement in the grates of locomotives, which consists in a certain construction of hollow grate bars, with provision for the admission of air to be forced through them by the movement of the locomotive for the purpose of keeping them cool.

Gas Retort Cover.—With this arrangement the retort can be packed by the water in the chamber or channel round its upper edge, sufficiently tight to prevent the escape of the gas when the pressure on the same is at the proper and safe degree, but when the pressure of the gas in the retort becomes too great and dangerous, instead of an explosion occurring the gas will, by means of the perforations in the periphery of the box or cylindrical cover, exert its pressure upon the water in the channel or chamber at the upper edge of the retort and displace and spill said water over the upper edge of the chamber or channel until its level falls below the safety perforations in the periphery of the cover, when the gas will have a free escape and cease to act with a dangerous pressure upon the retort. We regard this as an excellent attachment to gas retorts for family cooking ranges and portable gas apparatus, it rendering explosions impossible. It is the invention of A. Hendrickx, of New York.

Switch Lamp—This is a signal lamp for placing upon the switches of a railroad junction. The invention consists in placing within a lantern of proper construction, glass slides of different colors, the slides being fitted in proper guides and connected with a pendulous frame—the whole being arranged so that by operating the switch lever the colored slides will be moved or adjusted by the pendulous frame, and a light of a different color thrown from the lantern at every position of the lever, thus indicating the position of the switch. By this invention the signal lantern is rendered self-adjusting or made to operate automatically by the movement of the switch lever, and accidents which have hitherto occurred by the negligence of the switchman in not moving the switches will be avoided, for the engineer will be able to see at once the position of a switch. S. N. Lennon, of Deposit, N. Y., is the inventor.

Papermaking Machine.—Thomas Lindsay, of Westville, and Wm. Geddes, of Seymour, Conn., have invented some improvements in the Fourdrinier papermaking machine, the objects of which is to vary the width of the paper while the machine is in operation and during the process of manufacture. The invention consists in having the "lip" or basin which conducts the pulp from the endless wire apron constructed in two parts, so arranged that one part may slide over the other, and having said parts connected with the "deckles," which, as well as the "deckle straps" are, by a novel mechanism, rendered susceptible of lateral adjustment. The "deckles" determine the width of the pulp on the wire gage apron, and consequently determine the width of the paper, and as the two parts of the "lip" or basin which conducts the pulp to the apron, are connected to the "deckles" one to each, the two parts of the "lip" or basin will be removed simultaneously with the "deckles," and consequently expanded or contracted in width so as to correspond with the width or space between the "deckles." A novel way of adjusting the usual gage for distributing the pulp on the endless wire apron is also employed. These improvements have been patented in England.

Gas Regulator—There are many gas regulators, the opening of whose valve is controlled by the pressure of the gas on an inverted cup floating in a basin of quicksilver, and this invention relates to that description. It consists in the employment, in regulators of that arrangement of a regulating valve of the form of an inverted cup, having apertures in its sides, and dipping into the quicksilver which constitutes the valve seat, this valve being applied to the outlet passage of the regulator, and so connected with the inverted cup by a lever, and the arrangement of the inlet and outlet passages being such that as the street pressure or number of burners in use varies, the valve is caused to dip more or less deeply into the quicksilver, and more or less submerge its apertures, and thus regulate the amount of opening of the valve to supply the gas at all times at an uniform pressure to the burners. The inventor is J. H. Powers, of Newark, N. J.

Milk Closet.—E. H. Nash, of Westport, Conn., has invented a new and useful milk closet or house, the object of which is to provide a cheap and portable device, one in which a large number of milk pans can be placed in as small a space as possible, and in a very expeditious manner, the device being so arranged as to allow the air to circulate freely through it, and at the same time obstruct the sun. The invention is designed for those who have but a very small dairy, too small to warrant the building of an expensive milkhouse, and also for those who at times have a supply of milk greater than can be kept in the permanent milkhouse. The inventor has assigned three-quarters of his invention to Wm. Wood, of the same place.

Improvement in Bridges.—This invention consists, firstly, in a certain mode of arranging and combining the string pieces or chords, the main and counter braces, tension-rods and counter tension-rods, and bearing blocks, whereby the inventor—Mr. Albert D. Briggs, of Springfield, Mass.—produces a truss frame capable of sustaining any required load with less material than is required with the common mode of arranging and combining the parts. It consists, secondly, in a certain method of increasing the bearing surface for the bearing blocks, against which the braces abut in truss frames.

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Correspondents

G. W. J., of Miss.—The non-conducting material generally used for covering steam pipes, to retain their heat, is felted hair cloth wrapped spirally around them.

J. B., of La.—The first mention that can be found of anybody being moved by the force of steam is recorded in a work called "Spiritulia sae Pneumatica," where the invention of Hero of Alexandria, in 120, B. C., is noticed.

J. P., of Wis.—The method you describe of elevating water by means of buckets attached to an endless chain, is very old, and not patentable.

S. B., of N. H.—The difference in the temperature of water in the day and night is so small that it could not affect its weight sufficiently to account for the phenomenon of its doing more work at night than day.

G. H., of N. C.—One cubic foot of gas, such as is used for filling balloons, will elevate into the air about one ounce weight.

W. T. B., of Ill.—The plan you propose for propelling canal boats is substantially the same as that adopted on some rivers as a means of ferriage. A rope is stretched across the river, and grasped between two clamping wheels located on the boat. By turning one of the wheels with a crank, the boat is moved back and forth. Employing steam as the motor instead of hand power would not give novelty to the scheme. A patent could not be had.

B. S. O., of ——.—A human body, when it sinks in the water, is so nearly of the same specific gravity as the water, that it requires but a small disturbing force to bring it to the surface. This is the reason why cannon are fired over places where persons have been drowned, in order to produce a concussion which shall literally "shake them up."

N. C. T., of Ill.—Wilder's patent filling for safes is composed of plaster of Paris and mica. The base of most fireproof compositions used in safes is plaster of Paris. Valentine & Butler fill their safes with a patent composition of plaster of Paris and alum combined. Their "filling" is the best known to us. Alum when heated, you are aware, throws off a vapor, and the heat taken up in producing this vapor, which is allowed to escape, is so much heat carried away from the safe.

A. C. M., of Mass.—An assignee of an invention has no right to improvements made upon the same, without the assignment contains a covenant to that effect. The addition of the words "or may be granted," after the words "to the full end of the term for which said Letters Patent are," would not convey this right. A patentee having assigned his right to an invention can obtain a separate patent for any improvement he may make upon it, but he cannot use any part of the invention covered in the original patent without the assignees' consent, any more than an outside party can; nor is the assignee allowed to use the improvement without the consent of its inventor.

C. F., of N. J.—India rubber and other soft materials have been attached to the bottoms and corners of trunks and chests, for the purpose of relieving the shock and injury consequent upon these parts being brought into violent contact with other objects, and your suggestion is not therefore patentable.

L. W., of Del.—Young ladies are at all times interesting, but doubly must be the lovely fair one whom you describe as having a mustache of "dark color, soft and silky in the extreme." Your sympathy runs in the wrong direction. An appendage so graceful and *distingue* should, by all means, be preserved and cultivated; but perhaps your gentle friend will think differently. If she will procure a pair of those delicate little tweezers that are sold in the shops, she can very readily root out the offending hairs without the least injury to her ivory skin.

L. B. P., of Ohio.—The idea of a machine for raking and binding grain from the swath is not new. But perhaps in the details of your construction some novelty exists. Working the seeding parts of a planter by the foot or by a treadle is not new.

J. G. C., of Va.—The idea of employing a balloon or hydrogen gas to lift the body of a vessel above the surface of the sea, while the paddle wheels project down, and act as propellers upon the water, is very old. You are decidedly behind the times. A later and better plan is to lift the vessel so far above the earth as to get rid of the attraction of gravitation; then hold still until the earth turns, and brings the place you desire to reach immediately beneath your machine, and then descend upon the spot like a hawk. The employment of steam, hot air, electricity, paddle wheels and screws will thus, you perceive, be saved.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, July 31, 1858:—

H. L. A., of Wis., $30; E. L. L., of N. Y., $30; P. M., of Mich., $30; C. & B., of Ill., $30; J. P. H., of Ill., $25; E. L., of Conn., $25; J. H., of N. Y., $55; F. B., of Conn., $25; S. S. T., of Ind., $30; E. M., of N. Y., $25; X. & D., of N. Y., $60; J. H. C., of N. Y., $155; A. F. B., of Wis., $25; W. W. L., of Ohio, $400; R. & Bro's., of Conn., $25; A. D. B., of N. Y., $55; T. & B., of N. Y., $100; W. A. H., of N. Y., $25; T. S. B., of N. Y., $20; J. C. DeW., of N. J., $27; E. C., of Mass., $30; J. B., of N. Y., $30; C. H. R., of Me., $15; S. Y., of Mass., $30; J. S., of Ohio, $25; I. D., of Conn., $130; D. W. T., of Ill., $30; T. C. A., of Ohio, $30; P. & H., of N. Y., $25; W. C., of Mass., $250; W. S., of Mo., $25; A. F. & J. H. A., of Conn., $25; J. H. T., of N. Y., $55; W. P., of Del., $30; T. H. K., of Ga., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 31, 1858:—

G. M. P., of Mass.; H. L. A., of Wis.; R. & Bro's, of Conn.; J. P. H., of Ill.; R. J. M., of N. Y.; E. L., of Conn.; J. H. C., of N. Y.; E. M., of N. Y.; J. S., of Ohio; J. M. S., of Cal.; F. B., of Conn., P. & H., of N. Y.; J. C. DeW., of N. J.; W. H. Van G., of N. J.; A. F. B., of Wis.; C. H. R., of Me.; A. F. & J. H. A., of Conn.; W. S., of Mo.; K. & D., of N. Y.

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*** All advertisements must be paid for before inserting.

IMPORTANT TO INVENTORS.

THE RAPID GROWTH OF OUR PATENT Agency business during the past three years has required a great addition to our ordinary facilities for its performance, and we are now able to announce the completion of a system which cannot fail to arrest the attention of all who have business of this kind to transact.

OUR PRINCIPAL OFFICE

will be, as usual, at No. 128 Fulton street, New York. There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we established over a year ago a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

A SPECIAL NOTICE.

We especially require that all letters, models and remittances should be made to our address at New York.

EXAMINATION OF INVENTIONS.

We have been accustomed from the commencement of our business—thirteen years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice free and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

Our extensive experience in mechanical and chemical improvements enables us to decide adversely to nearly one half of the cases presented to us for our opinion, before any expense has occurred in the preparation of the case for a patent.

When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and description of the improvement. Our fee for this service will be $5.

After sufficient experience under this system, we confidently recommend it as a safe precautionary step in all cases before application is made for a patent—not that there will be no rejections under this system. It is impossible to avoid such results in many cases, owing to the exceedingly wide range taken by the Examiners in the examination of cases; but, nevertheless, many applicants will be saved the expense of an application by adopting this course. Applicants who expect answers by mail must enclose stamps to pay return postage.

THE COSTS ATTENDING AN APPLICATION

for a patent through our agency are very moderate, and great care is exercised in the preparation of specifications, drawings, &c. No cases are lost for want of particular care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

A circular containing fuller information respecting the method of applying for patents can be had gratis at either of our offices.

REJECTED APPLICATIONS.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

Communications and remittances should be addressed to

MUNN & COMPANY,
No. 128 Fulton street, New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

WROUGHT IRON PIPE, CAST IRON PIPE, Galvanized Iron Pipe (a substitute for lead), Stop Cocks and Valves, Boilers and Boiler Flues. Pumps of all kinds sold at the lowest market rates by JAMES O. MORSE & CO., 76 John st., and 29, 31 and 33 Platt st., New York.

AMERICAN WATER WHEEL CO., MANUFACTURERS of Warren's Turbine Water Wheel—Warren & Damon's patent.—Three hundred and twelve of these turbines are now in successful operation in cotton and wool factories, flour mills, saw mills, &c., and are utilizing from 75 to 88 per cent of the power of the water under all heads, from one to thirty feet. The late improvement adds much to its efficiency and great economy in water power. It wholly obviates the well known evil—"the great loss of power from leakage at the periphery of the wheel," as long as it runs without adjustments. This improvement is equally applicable to all iron wheels. The patent right is for sale for a few States only. The fifth annual pamphlet published by the American Water Wheel Co. contains a complete description of the Warren Turbine, with illustrative engravings, a treatise on hydraulics, &c. It will be found useful and instructive to all millwrights and millowners. By application (two stamps enclosed), it will be forwarded to any part of the United States. All communications addressed to ALONZO WARREN, Agent, American Water Wheel Co., 31 Exchange st., Boston, Mass., will be promptly attended to.

PATENT RIGHT FOR SALE—FORBES' new and improved Window Fastener. It has never been before the public; will be sold cheap. Apply to or address D. H. SOUTHWICK, 61 Chambers st., (rear office), New York.

TRUSS PAD—FOR SALE—ONE-HALF THE interest for the United States in my Ventilated Truss, patented April 13, 1858. See SCI. AM., No. 33, Vol. 13, for description, &c. Address W. F. DAILY, 52 South Charles st., Baltimore, Md.

CANADA PATENT FOR SALE—THE ADvertiser has discovered an important fact in science, which has recently been patented in the British Provinces; and being engaged in elaborating a new process appertaining to his profession which requires time and money, he will dispose of the above on very reasonable terms. Particulars can be obtained of RICHARD OLIVER, Jeweler, 35 John st., corner of Nassau, (up stairs), New York.

BELLOWS' PATENT DRY CLAY BRICK MACHINE.—The undersigned has invented a machine that for cheapness, simplicity, durability, and the production of a superior article, is unequaled. Machines and rights for sale. EPH. H. BELLOWS, Worcester, Mass.

LANE & BODLEY, MANUFACTURERS OF Wood-working Machinery and Circular Saw Mills. Especial attention given to hub, spoke, felloe, and wheel machinery. Shafting and pulleys turned and balanced, $8 to $10 per 100 lbs. Corner of John and Water streets, Cincinnati, Ohio.

THE SUBSCRIBER HAS ESTABLISHED the manufacture of his Self-straining Saw Mill Irons, at Chicago, Ill. Letters addressed to him at Chicago for the next three weeks will receive personal and prompt attention, if accompanied with a stamp.
July 6, 1858. S. E. PARSONS.

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5,000 AGENTS WANTED—TO SELL four new inventions. Agents have made over $25,000 on one. Better than all other similar agencies. Send four stamps and get eighty pages particulars, gratis. EPHRAIM BROWN, Lowell, Mass.

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IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn."

S. D. BARNETT, MALLEABLE AND GREY Iron Foundry, Hamilton, corner of McWhorter st. Newark, N. J. Orders promptly attended to.

SECOND-HAND MACHINISTS' TOOLS—Viz., Engine and Hand Lathes, Iron Planers, Drills, Chuck Lathe, Gear Cutter and Vises, all in good order, and for sale low for cash. Also one new first-class Woodworth Planing and Matching Machine. Address FRANKLIN SKINNER, Agent, 14 Whitney avenue, New Haven, Conn.

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SLIDE LATHES, IRON PLANERS, UP right Drills, Slotting and Boring Machines, Universal Chucks, and a large assortment of machinists' tools, at greatly reduced prices. Address CHARLES H. SMITH, 135 North Third st., Philadelphia, Pa.

PATENT OFFICE MODELS CAREFULLY made on scientific principles, at low prices, by H. SHLARBAUM & CO., 300 Broadway, New York. References at the office of this paper.

STEAM WHISTLES—IMPROVED PATterns for locomotive and stationary engines. A large assortment constantly on hand. Manufactured by HAYDEN, SANDERS & CO., 306 Pearl st., New York.

BRADEN'S BURGLAR-PROOF LOCK—Adapted for safes, doors, &c. For description see No. 47, Vol. XIII, SCI. AM. State or county rights for sale. Address J. A. BRADEN, La Grange, Ga.

CLOCKS—TOWN CLOCKS OF ALL SIZES, Regulators and Timepieces for all purposes. Dials for illuminating. VOSBURGH & CO., Agents, No. 26 Liberty street, New York. JOHN SHERRY, Manufacturer, Sag Harbor, N. Y.

PORTABLE STEAM ENGINES.—S. C. HILLS, 12 Platt street, New York, offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store; it occupies a space 5 by 3 feet; weight, 1,500 lbs.; price, $240. Other sizes in proportion.

PUSEY'S HORSE POWER GOVERNOR—See cut in No. 45, Vol. XIII, SCI. AM. Shop rights for sale, to build in combination with the powers. Independent governors manufactured exclusively, and for Sale by the patentee, LEA PUSEY, near Wilmington, Del. Agents wanted.

MARYLAND INSTITUTE, BALTIMORE, —The Managers of this Institute, encouraged by the success of former efforts, announce, with confidence of continued success, their Eleventh Annual Exhibition, to be opened in the Institute's spacious building on the 5th of October, and continue open four weeks. From the 27th to the 30th of September, inclusive, articles will be received for competition and premium, afterwards for exhibition only. Persons from all parts of the Union are invited to contribute. Aside from the general advantages of this Institute for the exhibition of products of the skill and industry of their countrymen, the Managers submit that the present is an opportunity which none should allow to pass unimproved. As business is now rallying from its unparallaled depression, he who, by a judicious exhibition of his ability to meet the demands of that revival, and secure the attention and confidence of the community, insures success, and paves the way to competence and fortune. Circulars with rules, &c., will be promptly furnished on application to JOHN S. SELBY, Actuary.
D. L. BARTLETT, Chairman.

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Science and Art.

Interesting Geological Curiosity.

The editor of the Eutaw *Observer* was lately shown, by Dr. E. F. Bouchelle, a specimen of rock of the primitive order of formation, and of the pentædral order of crystallization, containing in its center a globule of water, movable and visible. The water is, if there be any truth in geology, one of the oldest drops of water in the universe, far more ancient than the waters of the flood of Noah. To use the language of Dr. Bouchelle, "It is a drop of the waters that covered in darkness the face of the great deep when the earth was without form and void. In other words, this little drop is a portion of the first water that was created during the six days of Genesis, and became entangled among the particles of the rock during the act or process of crystallization. The rock being primitive, or the first of creation, the water must also be primitive."

Newly Discovered Paint Deposits.

Professor De Bow recently visited the paint deposits lately discovered by Hugh White on his land near Liberty, Bedford county, Va., and furnishes the Richmond *Inquirer* with the result of his investigations, from which it appears they are the most extensive body of decomposed ochrous iron ores in the United States, if not the world. Though situated in juxtaposition with the decomposed granite in the form of porcelain—which is beautiful and abundant—and formed from the decomposition of the primitive order of silicious formation, this paint has all the features of a real pigment, pulverizes easily, contains no foreign impurities, is soft and yielding to the touch, and though oily and compressible, is entirely free from clay, and indeed has all the properties of umber, which it resembles both in character and appearance. In color it varies from a light yellow to a dark brown, as taken from the bank. The small or loose umber is the lightest, both in density and color. The flake ranges from a chrome yellow to a brown black, and when burned and properly prepared, forms the fine burnt umber of the arts, so valuable to painters and artizans generally.

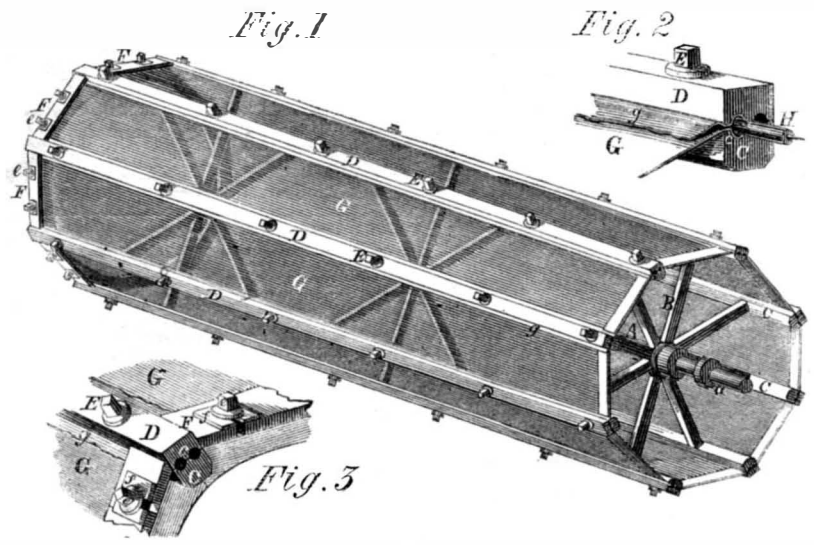
The hard smooth face presented by the common paint, as taken from the mine, and simply mixed with oil, give it a valuable character as a durable fire-proof paint, well adapted to railroad cars, bridges, buildings, &c. The bank containing it is admirably situated, in regard to availibility, both for transportation and mining, or preparing for market. It is near the Virginia and Tennessee Railroad, and situated on the side of a hill, from which the water drains naturally. The paint in the crude form, as it comes from the mines is well adapted to all common purposes, and is said to be much superior, both in appearance and utility, to Blake's paint, with which most of our readers are acquainted. We have no doubt but that this deposit will prove valuable to the owner, and of much utility to the community, since a good and cheap domestic article of paint is a desideratum of much importance.

Improved Bolting Reel.

The method usually pursued in attaching bolting cloths to reels is clumsy and inefficient, being by means of tacks, which tear the cloth, and will never keep it at the same tension or tightness all around the bolt. It is extremely troublesome to remove, and should any portion get torn or damaged it cannot well be repaired, so the millers usually paste up the hole, which helps to clog the bolt, and prevent its perfect action. The method of attaching cloths to reels, which is the subject of our illustration, is the invention of John Woodville, of Chilicothe, Ohio, and was patented by him April 21, 1857.

Fig. 1 is a perspective view of a bolt, A being the central axle, with journals, *a*, on which it can rest, and from the axle projects two or more sets of radial arms, B, that carry the slats, C, which run parallel with the axle from the reel. Each of these slats, C, has two semi-circular grooves in it, *c*, and there fits on the top of each of them another slat, D, having corresponding semi-circular grooves; C and D, being secured together by square headed screws, E. At one end of the bolt, plates, F, pass between the slats, giving rigidity to the reel, and helping to hold the cloth

WOODVILLE'S BOLTING REEL.

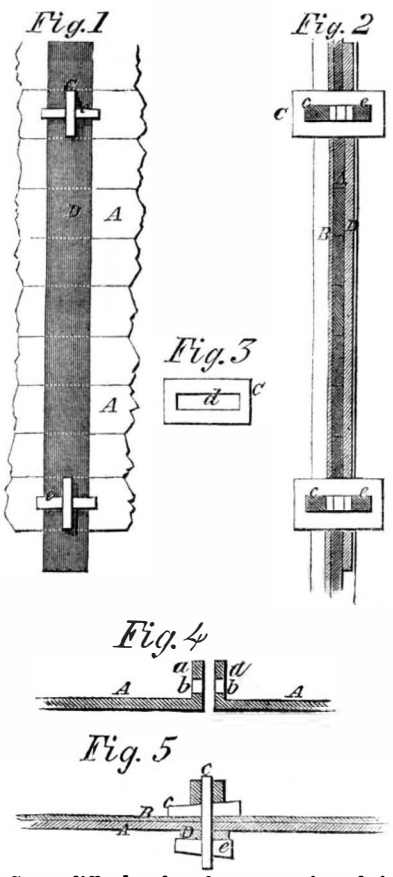


being inserted into the semi-circular groove in C, and the plate, D, screwed down tight over it, holds the bolting cloth perfectly rigid at one side. The other side is now passed round a loose rod, H (seen in Fig. 2), which is placed in the nearest groove, *c*, of the next slat, and the cloth being pulled tight round it, the slat, D, (having first a side of another cloth placed in its other groove,) is partly screwed down, and the cloth can be pulled to any desired tension by the projecting slip, *g*; but when D is once thoroughly screwed tight (seen in Fig. 3). They are attached to a rim with which that end of the reel is provided, by screws, *e*, passing through a slot in the metal plate, *f*, that is on the wooden plate or piece, F. G are the cloths, each of which, whether of silk or fine wire gauze, should be bound with canvas to protect the edges and ends. The canvas of one of the long sides is stitched round an iron or other rod, which, it will not move. The ends are now pulled "taut," and the piece, F, secured, and the bolting cloth is fixed. In this way the whole reel is quickly made up.

This system has been in use some time, and has fully answered the inventors' expectations, giving, by the evenness of its surface, a superior bolting reel, and being easily repaired, cleaned, or adjusted. We recommend it to the notice of every miller.

Any more particulars can be obtained from the inventor, as above.

McKibbin's Method of Securing Metal Bars.



Great difficulty has been experienced in securing the ends of bars firmly together when arranged on the same line with each other, in the construction of bridges and other structures, and the object of this invention is to provide a simple and effective plan for accomplishing this object. It consists in a novel and very simple method of clamping and securing the ends of metal bars, and uniting plates with the said bars, by which great strength is obtained. The invention is applicable, in almost all cases where it is required to connect the ends of iron bars.

In our illustrations, Fig. 1 represents this contrivance applied to a portion of an iron bridge girder; Fig. 2 is a vertical transverse section of ditto; Fig. 3 is a view of the slotted plates between the bars; Fig. 4 is a horizontal section of the ends of two bars nearly brought together; and Fig. 5 is a horizontal section of ditto connected. Similar letters refer to like parts.

A are a series of flat horizontal iron bars, arranged edgewise one above the other, and united to form part of the bridge girder. B is a plate iron sheathing, covering one side of the said series of bars. As the bars, A, extend the whole length of the bridge, they have to be composed of several lengths or sections united at their ends, and the mode in which these lengths or sections are united constitute the invention. The ends of the bars, A, are bent at right angles to form lugs, *a a*, in which are formed narrow slots, *b b*, to receive a wedge or key, *c*. Between the lugs, *a a*, of two lengths of bar iron, is fitted a plate, C, whose width is the same as the width of the bars, A A, and in which is formed a slot, *d*, of the proper width to receive the wedge or key, *c*. A vertical iron plate, D, is placed against the opposite side of the joint to that from which the lugs, *a a*, project, and this plate, D, contains slots for the plate, C, to pass through. When the plate, C, is placed between the lugs, *a a*, and the plate, D, applied, the wedge or key, *c*, is inserted through the slots, *b* and *d*, of the lugs, *a a*, and plate, C, and a wedge, *e*, is inserted in the slot, *d*, outside of the plate, and when both wedges are driven tight, the joint between the two lengths of bars, A A, is secure.

The sheathing, B, when used, is simply applied close to the bars, A, on either side, holes being provided in the sheathing for the plates, C C, or for said plates and lugs, *a a*, to pass through, according to the side on which the sheathing is placed. When a series of several bars are to be combined, by arranging them together endwise, the plates, D, are to be long enough to lay across the end of the whole series of said bars, and to serve for two joints; but if a single line of bars only are intended to be united, these plates, D, need only be long enough to cover one joint.

This simple combination of parts to accomplish a very desirable end was patented on the 9th of March, 1858. Any further information can be obtained by addressing the patentee, William McKibbin, San Francisco, Cal.

News from the Bells.

The new Victoria bell, which is "Big Ben" re-cast, and is intended for the British Houses of Parliament, weighs 13 tuns. 10 cwt., 1 qr., 12 lbs., or rather more than 2 tuns less than the original. Its diameter is 9 feet, and hight 7 feet 6 inches. The church of Bon Secours, at Rouen, France, is about to be supplied with a chime with all the modern improvements; the chimes are to play special airs on saints' and holy days, and to have a finger-board, so that any musician can make them discourse eloquent music.

Vacancy in the Patent Office.

In our last number a paragraph appeared with the above caption, which, owing to a misapprehension on the writer's part, was not altogether correct, and does one of the ablest Examiners which the Patent Office now possesses—Dr. King—a slight injustice. Soon after the removal of Dr. Everett from the Patent Office, Dr. King was appointed to fill his place, which comprises inventions almost as diffused as air or carbonic acid. Willing and talented as Dr. King is, he is not quite equal to a labor of Hercules, and this is the reason why so many inventions in the steam engine department have had to wait a long while for their examination, together with the fact that such a great number of inventions come within this class.

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